



## TEST REPORT

**Date:** 2013-08-16

**Report No.:** 60.870.13.028.01F

**Applicant:** Binatone Electronics International Limited  
Floor 23, 9 Des Voeux Road West, Sheung Wan, Hong Kong

**Description of Samples:** Model name: Wifi Video Baby Monitor Camera  
Brand name: Motorola  
Model no.: BLINK1.1, SCOUT1.1, BLINK1.1-W, BLINK1.1-R, BLINK1.1-S, BLINK1.1-B, BLINK1.1-BLK, SCOUT1.1-B, BLINK1-WA, BLINK1-RA, BLINK1-SA, BLINK1-BA, BLINK1-BLKA, SCOUT1-BA, BUDDY-BU  
FCCID: VLJ-BLINK11

**Date Samples Received:** 2013-07-23

**Date Tested:** 2013-07-23 to 2013-08-15

**Investigation Requested:** FCC Part 15 Subpart C, Section 15.247

**Conclusions:** The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

**Remarks:** ---

Checked by: \_\_\_\_\_ Approved by:- \_\_\_\_\_

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Ray Cheung  
Project Engineer  
Wireless & Telecom department

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Jeff Pong  
Operation Manager  
Wireless & Telecom department

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**Appendix A**

Photos of Test Setup

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External EUT Photos

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Internal EUT Photos



## **1.0** **General Details**

### **1.1** **Test Laboratory**

SEM. Test Compliance Service Co., Ltd  
3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an  
District, Shenzhen  
Registration Number: 994117

Tested By:

A handwritten signature in blue ink that reads 'John Zhi'.

John Zhi

### **1.2** **Applicant Details** **Applicant**

**Binatone Electronics International Limited**  
Floor 23A, 9 Des Voeux Road West, Sheung Wan, Hong  
Kong

#### **Manufacturers**

**VTech Holdings Limited**  
23/F Tai Ping Industrial Centre Block 1, Tai Po HK



### 1.3 Equipment Under Test [EUT]

#### Description of EUT

Product Description:	WiFi Video Baby Monitor Camera
Model No.:	BLINK1.1
- Multi-list Model No:	SCOUT1.1 BLINK1.1-W, BLINK1-WA, BUDDY-BU (White color) BLINK1.1-R, BLINK1-RA (Red color) BLINK1.1-S, BLINK1-SA (Silver color) BLINK1.1-B, BLINK1-BA (Black color) SCOUT1.1-B , SCOUT1-BA (Black color) BLINK1.1-BLK, BLINK1-BLKA (Bronze color)
Brand Name:	Motorola
FCCID:	VLJ-BLINK11
Rating:	5VDC, 1000mA Powered by AD/DC Switching Adaptor
Operated Frequency:	2412 – 2462 MHz 2422 – 2452 MHz
No. of Operated Channel:	11 CH / (802.11b/g/n – HT20) ; 9CH / (802.11n – HT40)
Data Rate:	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0-7, up to 150Mbps
Modulation:	DSSS (BPSK, QPSK, CCK) and OFDM (BPSK/QPSK/16-QAM/ 64-QAM)
Accessories and Auxiliary Equipments:	AC/DC power adaptor, ThinkPad Notebook
Antenna Type:	Integral Antenna
Manufacture of Antenna:	CVISION HK LIMITED
Antenna Gain:	1.0dBi
Antenna Model:	---

#### General Operation of EUT

The Equipment Under Test (EUT) is a WiFi Camera Unit operated at 2.4GHz, which include of an 802.11b/g/n module.

As per Client Declaration, BLINK1.1 & all multi-list models (multi-list model listed on above) have the same technical construction including Software design, RF module, PCB layout, Circuit design, all electrical construction and basic mechanical construction. Only the outlook color is different between the models, so we use BLINK1.1 as a representative model to perform all testing.



### **Description of Test Modes**

The EUT has been tested under operating condition. Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 1Mbps data rate (worst case) are chosen for the final testing.

IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6Mbps data rate (the worst case) are chosen for the final testing.

IEEE802.11n – HT20: Channel 1(2412MHz), Channel 6 (2437MHz) and Channel 11 (2462MHz) with MSC0 (worst case) are chosen for the final testing.

IEEE802.11n – HT40: Channel 3(2422MHz), Channel 6 (2437MHz) and Channel 9 (2452MHz) with MSC0 (worst case) are chosen for the final testing.

### **1.4 Related Submittal(s) Grants**

This is a signal application subject to Certificate Authorization.



## 2.0 Technical Details

### 2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.4: 2003

### 2.2 Test Standards and Results Summary Tables

Test Condition	Test Requirement	Test Result	
		Pass	N/A
Number of Frequency Hopping	Section 15.247 ( a1 )	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6dB Bandwidth Measurement	Section 15.247 ( a2 )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Power Spectral Density	Section 15.247 ( e )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Pseudorandom Hopping Algorithm	Section 15.247 ( a1 )	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Band Edge Measurement	Section 15.247	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Maximum Output Power	Section 15.247 ( b3 )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Out of Band Emission	Section 15.247 ( d )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiated Emission in Restricted Band	Section 15.247 ( d )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Conducted Emission on AC Mains	Section 15.207	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RF Exposure	Section 15.247 ( i )	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Antenna Requirement	Section 15.203	<input checked="" type="checkbox"/> See note 1	<input type="checkbox"/>

Note 1 : The EUT uses a permanently attached antenna, which in accordance to Section 15.203, is considered sufficient to comply with the provisions of this section.

Remark: N/A - Not Applicable



### **3.0 Test Methodology**

#### **3.1 Radiated Emission**

The sample was placed 0.8m above the ground plane on a standard emission test site \*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

#### **3.2 Field Strength Calculation**

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

$$\text{FS} = \text{R} + \text{System Factor}$$
$$\text{System Factor} = \text{AF} + \text{CF} + \text{FA} - \text{PA}$$

Where FS = Net Field Strength in dBuV/m at 3 meters.

R = Reading of Spectrum Analyzer / Test Receiver in dBuV.

AF = Antenna Factor in dB.

CF = Cable Attenuation Factor in dB.

FA = Filter Attenuation Factor in dB.

PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

#### **3.3 Conducted Emissions**

The test was performed in accordance with ANSI C63.4: 2003, with the following: initial measurements were performed in peak and average detection modes on the live line of personal computer, any emissions recorded within 30dB of the relevant limit lines were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.





**4.0 Test Results**

**4.1 6 dB Bandwidth Measurement**

Test Requirement: FCC part 15 section 15.247 (a2)  
 Test Date: 2013-08-02  
 Mode of Operation: Transmitting continuously mode  
 Detector Function: Max Hold

**Result: PASS**

**Test Setup:**

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

**For 802.11B Mode**

Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	11.582
Middle	2437	11.126
Highest	2462	11.114

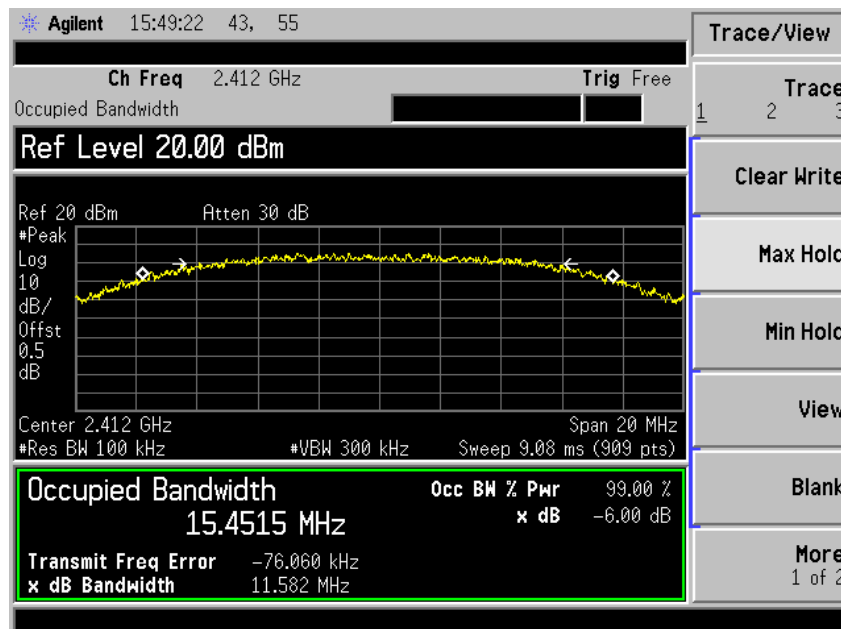
This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

**Limits for 6 dB bandwidth [ Section 15.247 (a2) ]:**

The minimum 6 dB bandwidth shall be at least 500 kHz.

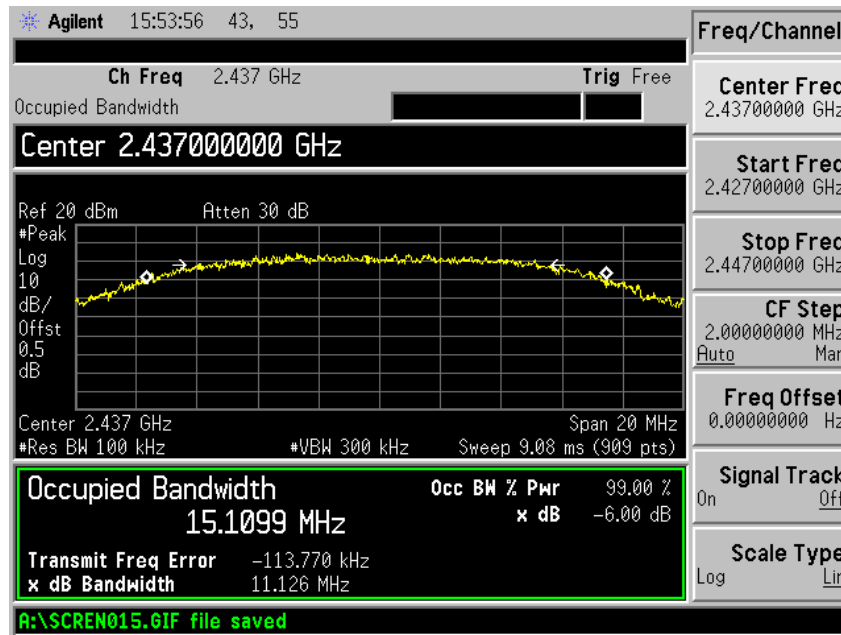
**For 802.11B Mode**

Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 11.582 MHz

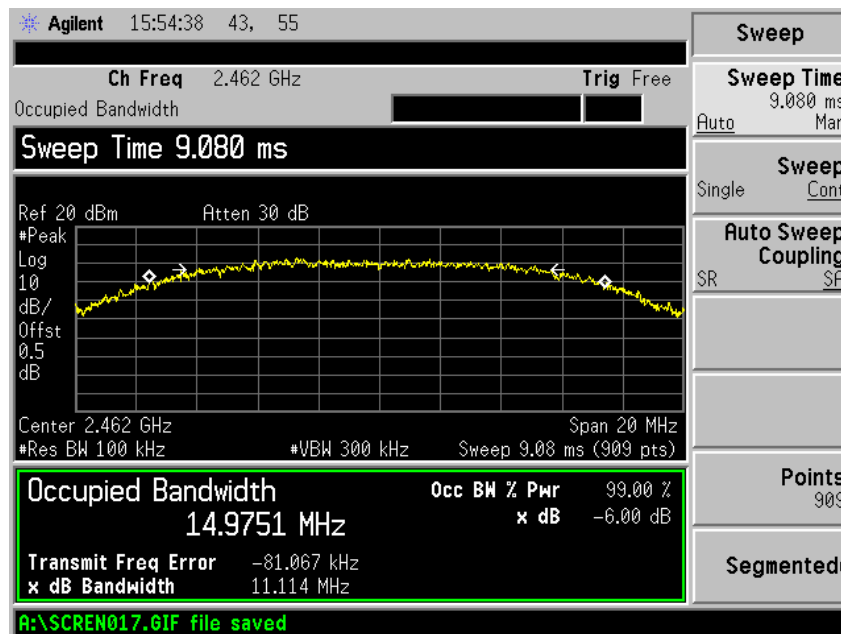




Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 11.126MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 11.114MHz





**For 802.11G Mode**

Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	16.297
Middle	2437	16.421
Highest	2462	16.060

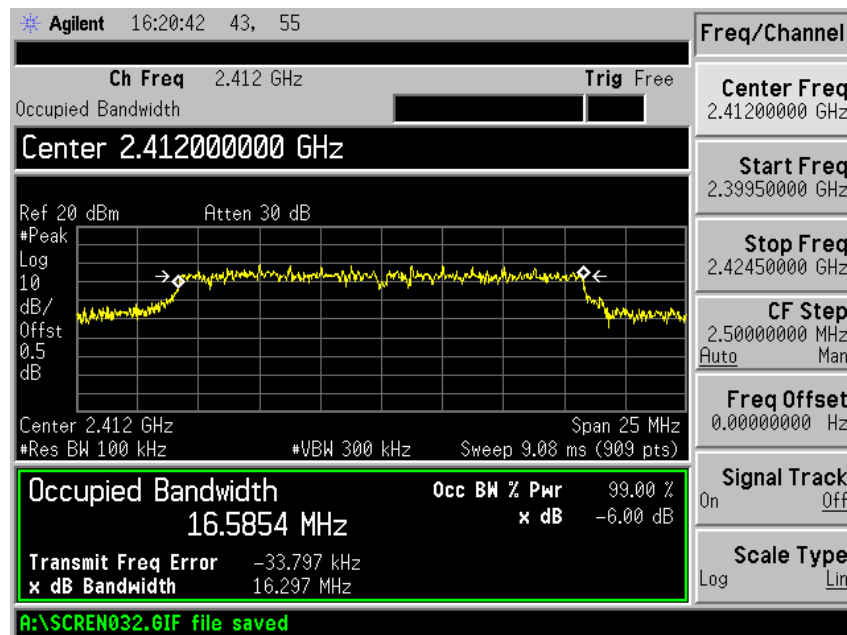
This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

**Limits for 6 dB bandwidth [ Section 15.247 (a2) ]:**

The minimum 6 dB bandwidth shall be at least 500 kHz.

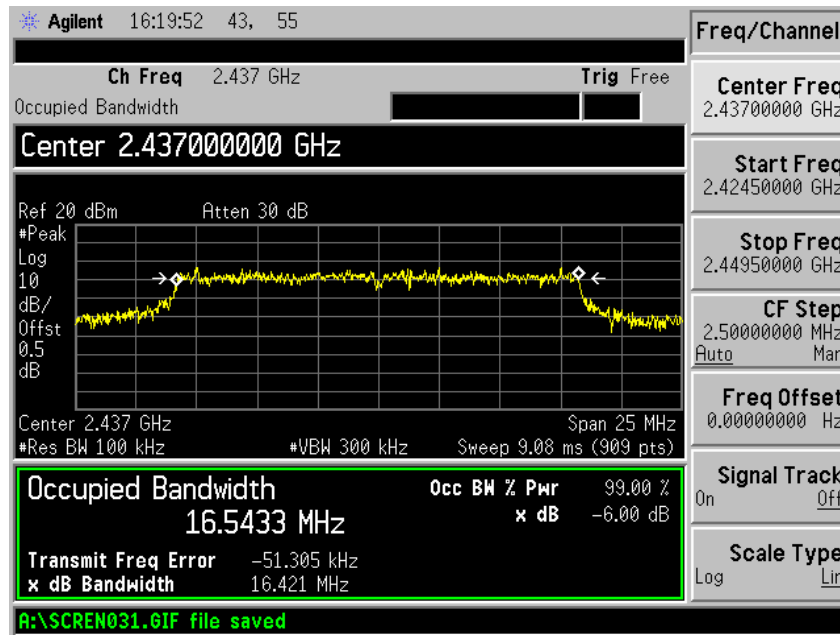
**For 802.11G Mode**

Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 16.297 MHz

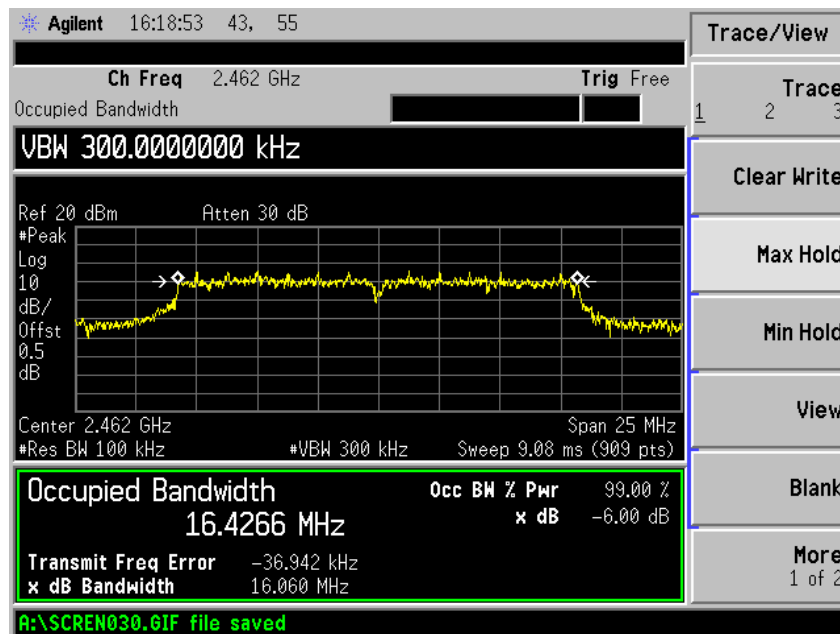




Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 16.421MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 16.060MHz





**For 802.11N – HT20 Mode**

Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	17.601
Middle	2437	17.525
Highest	2462	17.094

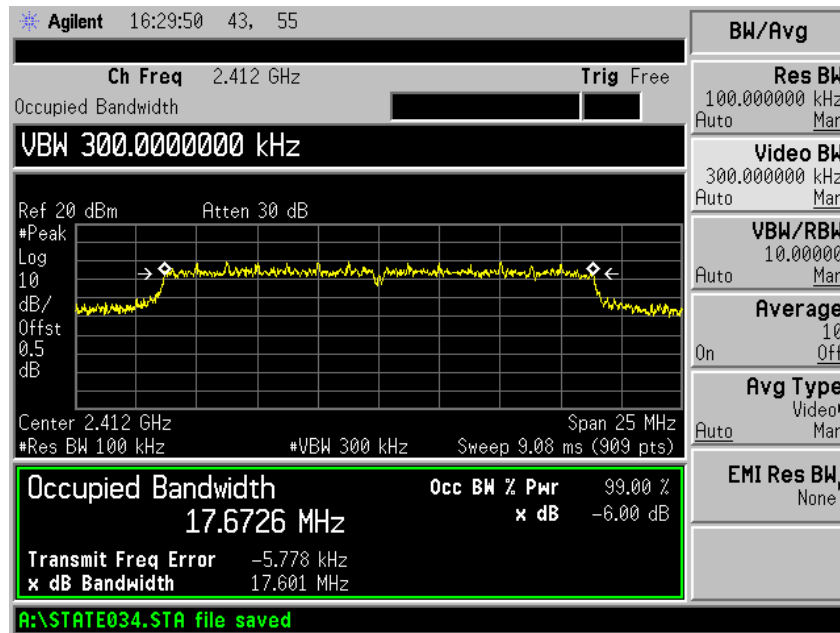
This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

**Limits for 6 dB bandwidth [ Section 15.247 (a2) ]:**

The minimum 6 dB bandwidth shall be at least 500 kHz.

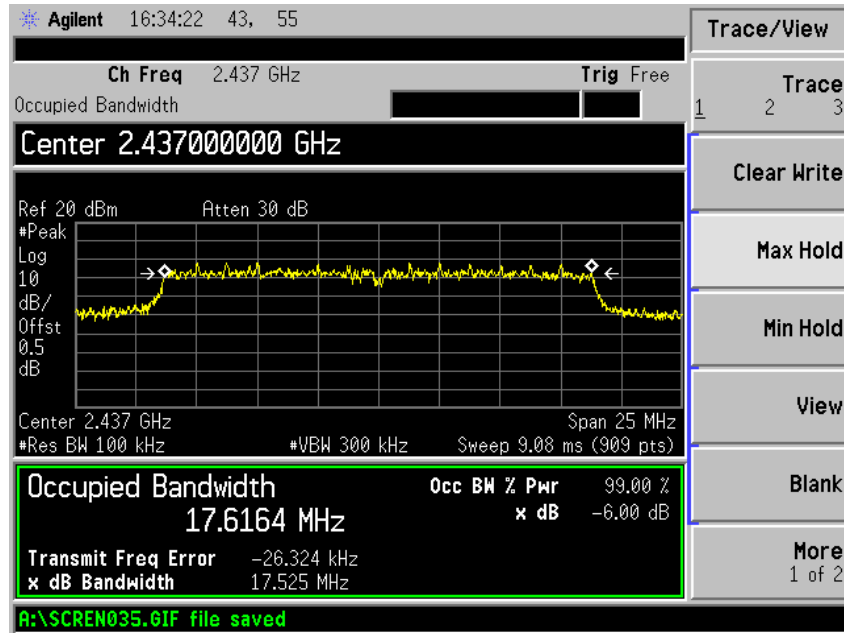
**For 802.11N – HT20 Mode**

Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 17.601 MHz

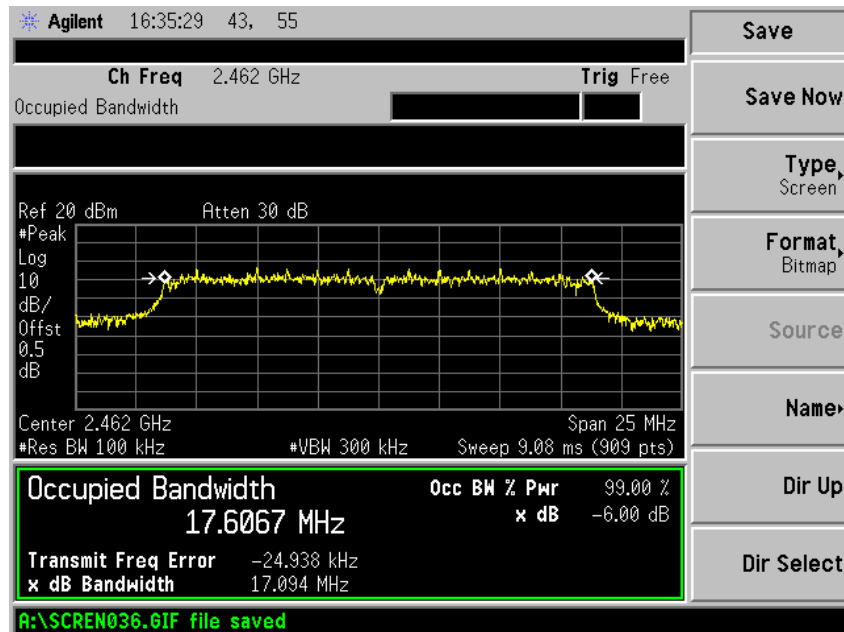




Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 17.525MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 17.094MHz





**For 802.11N – HT40 Mode**

Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2422	35.527
Middle	2437	35.837
Highest	2452	35.817

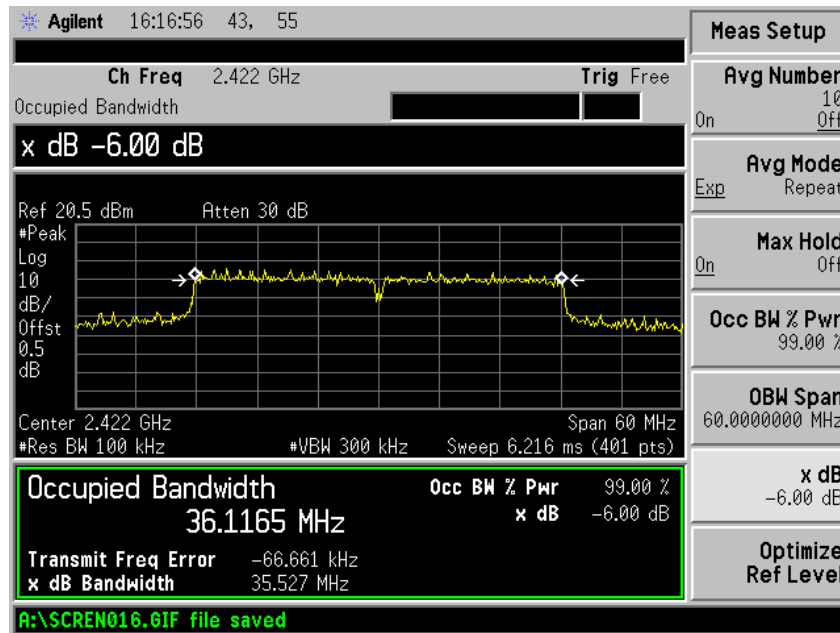
This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

**Limits for 6 dB bandwidth [ Section 15.247 (a2) ]:**

The minimum 6 dB bandwidth shall be at least 500 kHz.

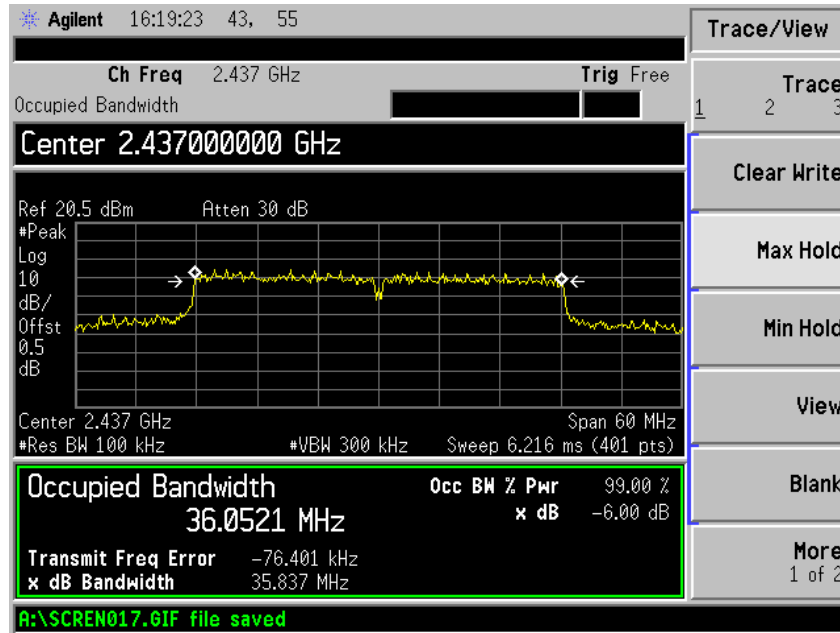
**For 802.11N – HT40 Mode**

Result data graph shows 6 dB bandwidth, CF = 2.422GHz, BW = 35.527 MHz

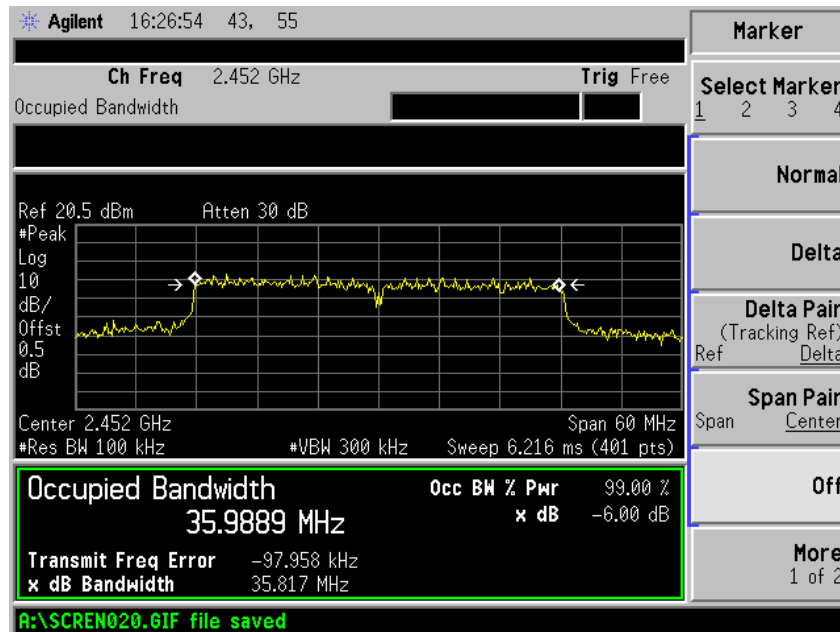




Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 35.837MHz



Result data graph shows 6 dB bandwidth, CF = 2.452GHz, BW = 35.817MHz







#### 4.2 Power Spectral Density

Test Requirement:	FCC part 15 section 15.247 (e)
Test Date:	2013-08-02
Mode of Operation:	Transmitting continuously mode
Detector Function:	Peak

**Result : PASS**

#### Measured Result :

Test mode	Test channel	Reading (dBm)	Limit (dBm)
802.11B	Low channel (2412MHz)	3.955	8
	Middle channel (2437MHz)	2.985	8
	High channel (2462MHz)	1.535	8
802.11G	Low channel (2412MHz)	-0.640	8
	Middle channel (2437MHz)	-1.615	8
	High channel (2462MHz)	-1.990	8
802.11N-HT20	Low channel (2412MHz)	-0.620	8
	Middle channel (2437MHz)	-1.515	8
	High channel (2462MHz)	-3.577	8
802.11N-HT40	Low channel (2422MHz)	-3.617	8
	Middle channel (2437MHz)	-4.667	8
	High channel (2452MHz)	-6.761	8

Note: 1. Above testing data has been considered with 0.2dB cable loss which between antenna port and spectrum.

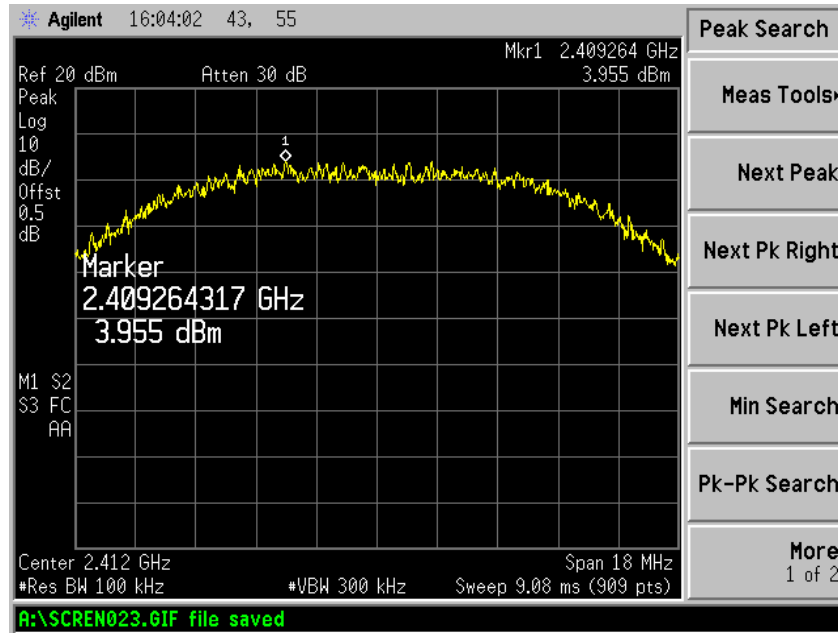
#### Limits for power spectral density [ Section 15.247 (e) ]:

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

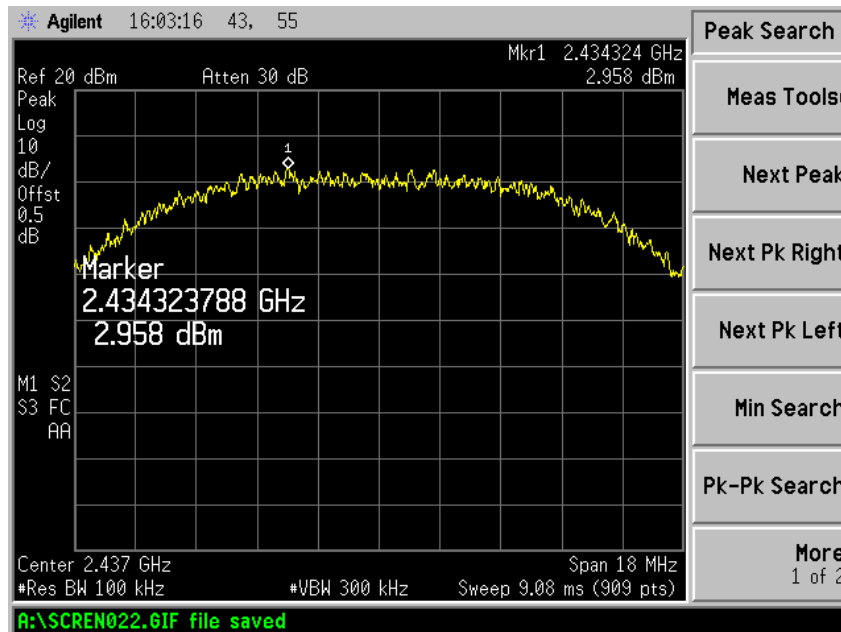


**For 802.11B Mode**

**Result data graph shows Low channel power spectrum density is 3.955dBm**

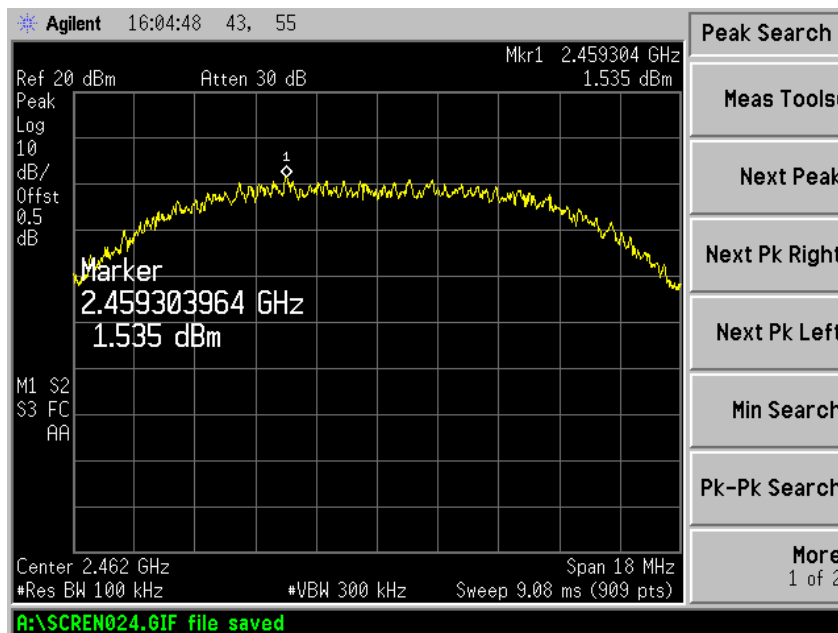


**Result data graph shows middle channel power spectrum density is 2.958dBm**





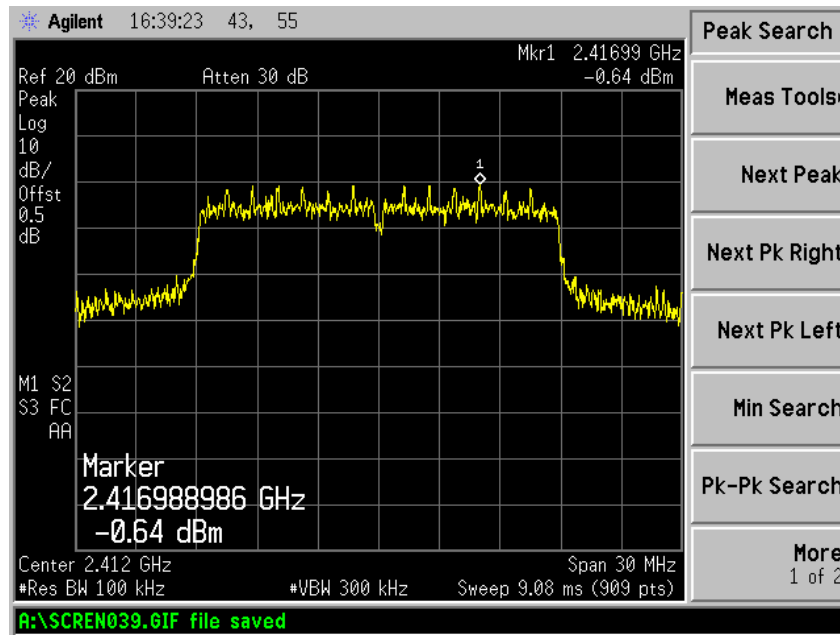
Result data graph shows high channel power spectrum density is 1.535dBm



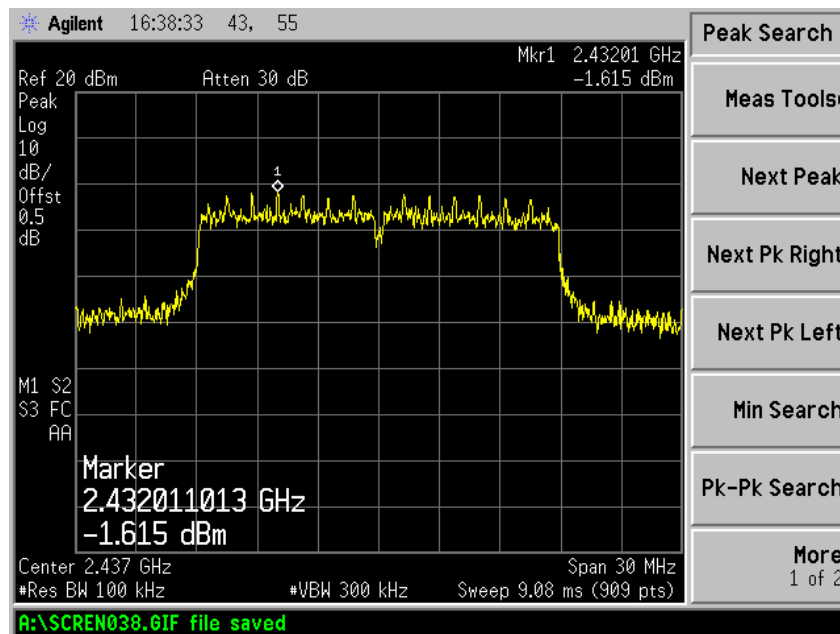


**For 802.11G Mode**

**Result data graph shows Low channel power spectrum density is -0.64Bm**

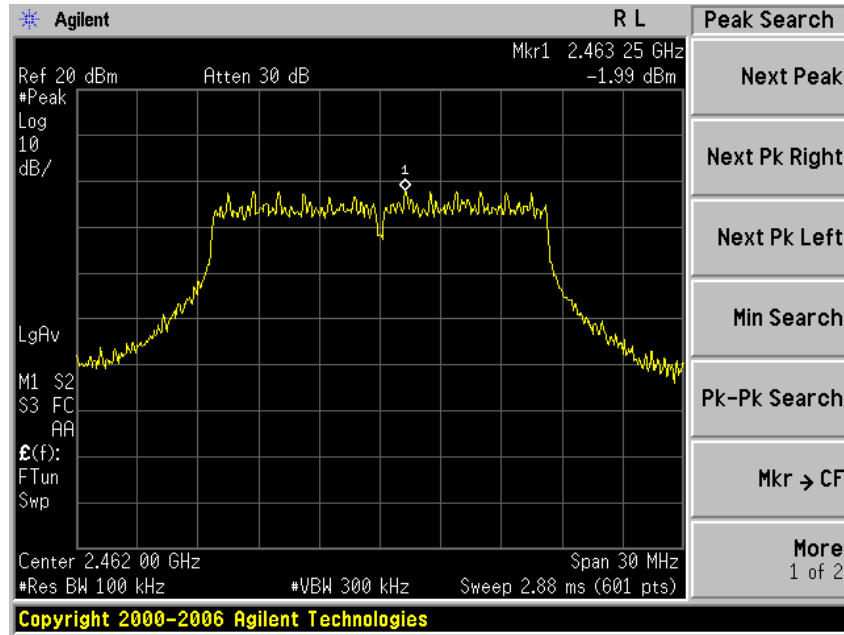


**Result data graph shows middle channel power spectrum density is -1.615dBm**





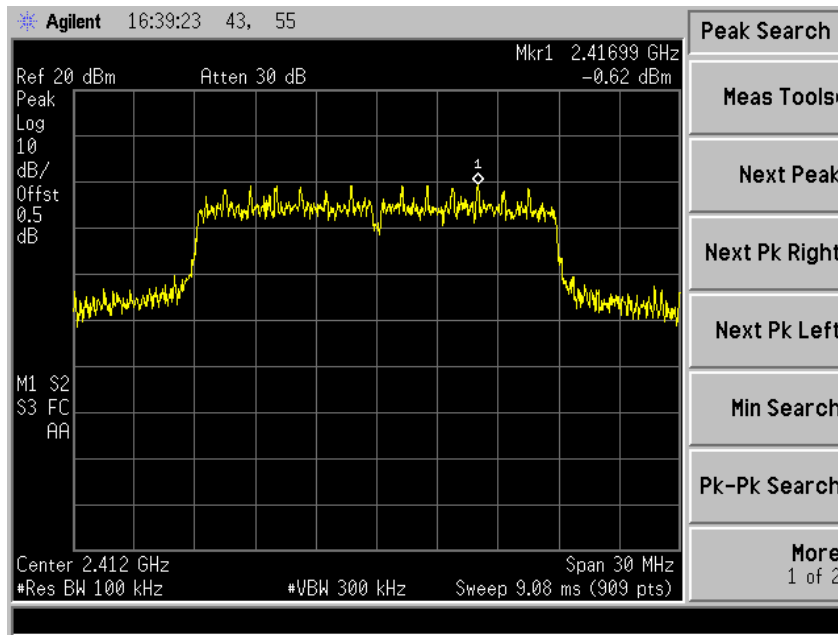
Result data graph shows high channel power spectrum density is -1.99dBm



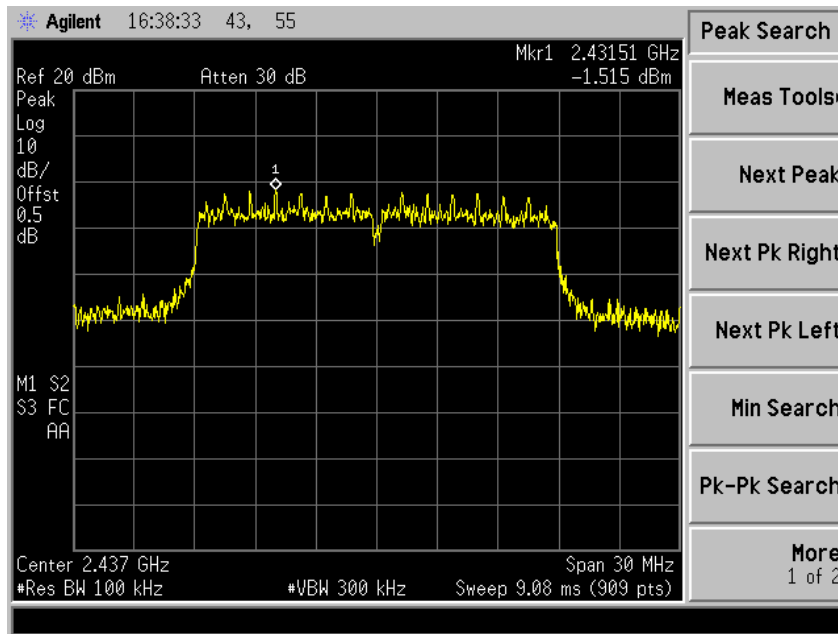


**For 802.11N-HT20 Mode**

**Result data graph shows Low channel power spectrum density is -0.62Bm**

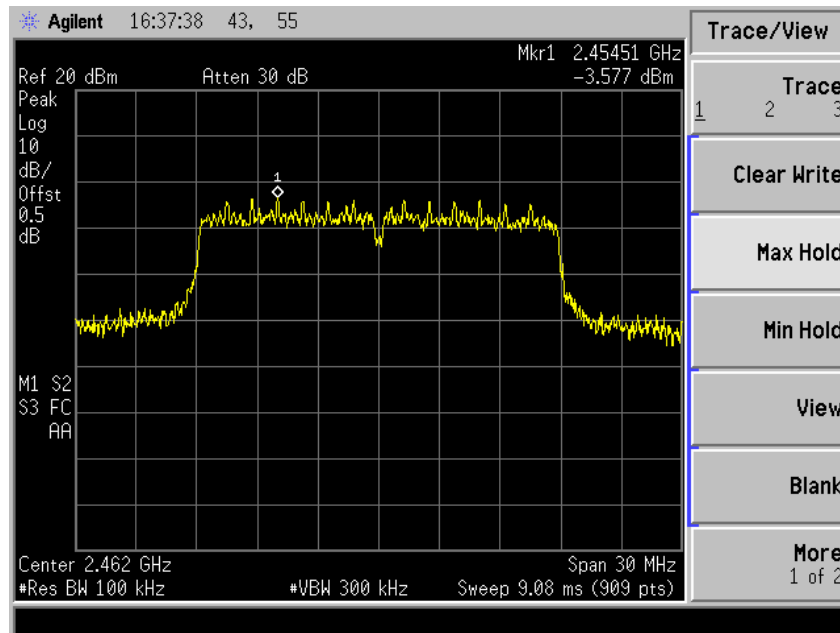


**Result data graph shows middle channel power spectrum density is -1.515dBm**





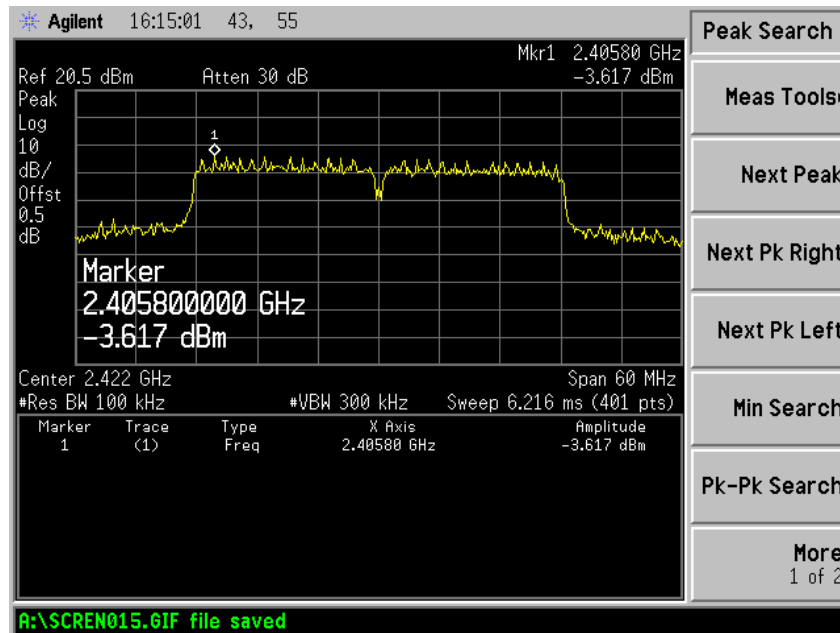
Result data graph shows high channel power spectrum density is -3.577dBm



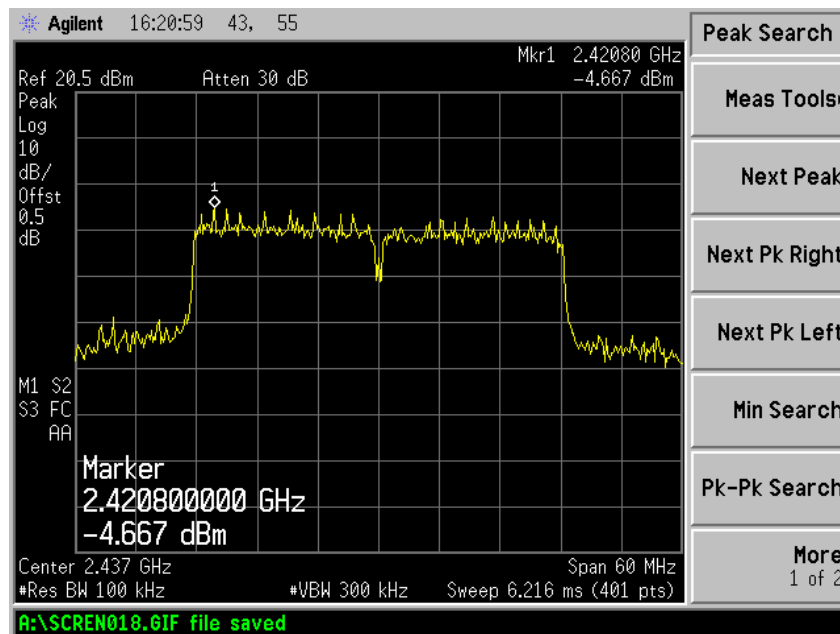


**For 802.11N-HT40 Mode**

**Result data graph shows Low channel power spectrum density is -3.617Bm**



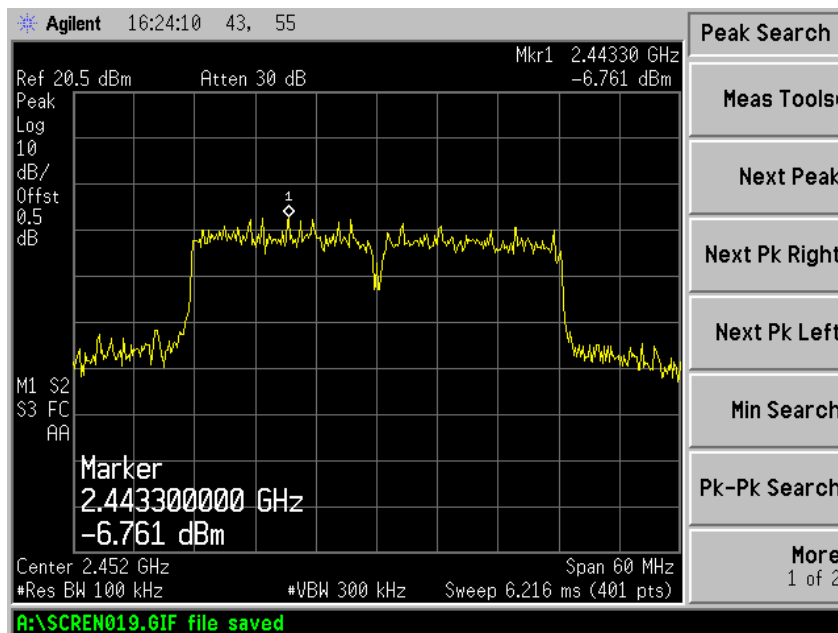
**Result data graph shows middle channel power spectrum density is -4.667dBm**







Result data graph shows high channel power spectrum density is -6.761dBm





### 4.3 Band Edge Measurement

Test Requirement: FCC part 15 section 15.247  
 Test Date: 2013-08-02  
 Mode of Operation: Transmitting continuously mode.  
 Detector Function: Max Hold

**Result: PASS**

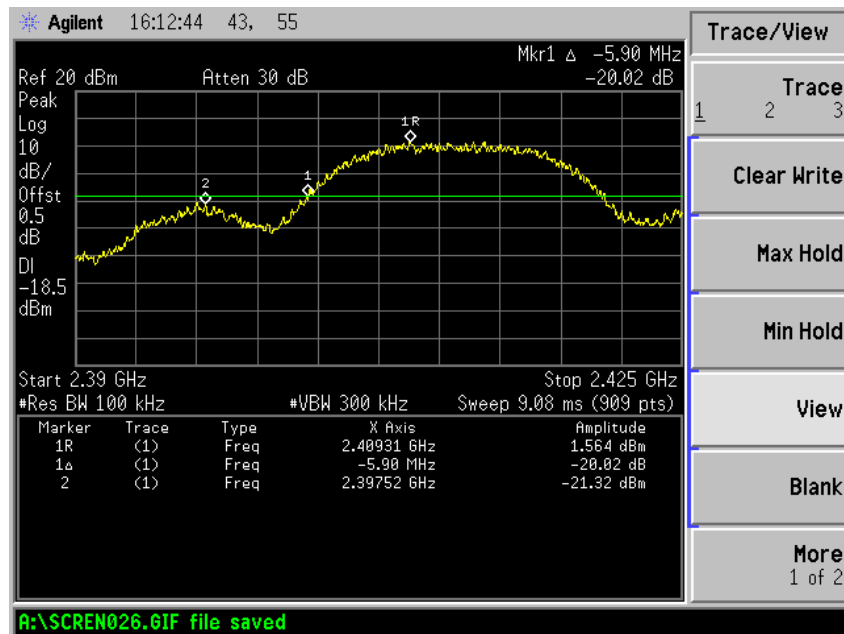
#### Measured Result :

Refer to the figure, it shows the frequency of lower band edge and upper band edge separately.

#### Limits of Band Edge for Carrier Frequencies Operated within the Bands [ Section 15.247 ]:

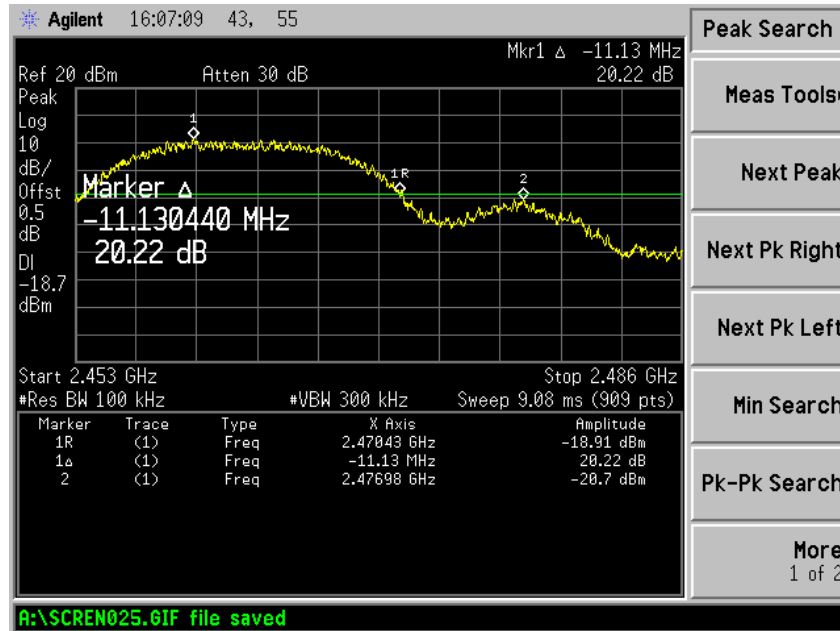
The carrier frequencies should operate within 2400-2483.5MHz.

Result data graph shows the frequency of lowest channel.  
 For 802.11B Low Channel Mode

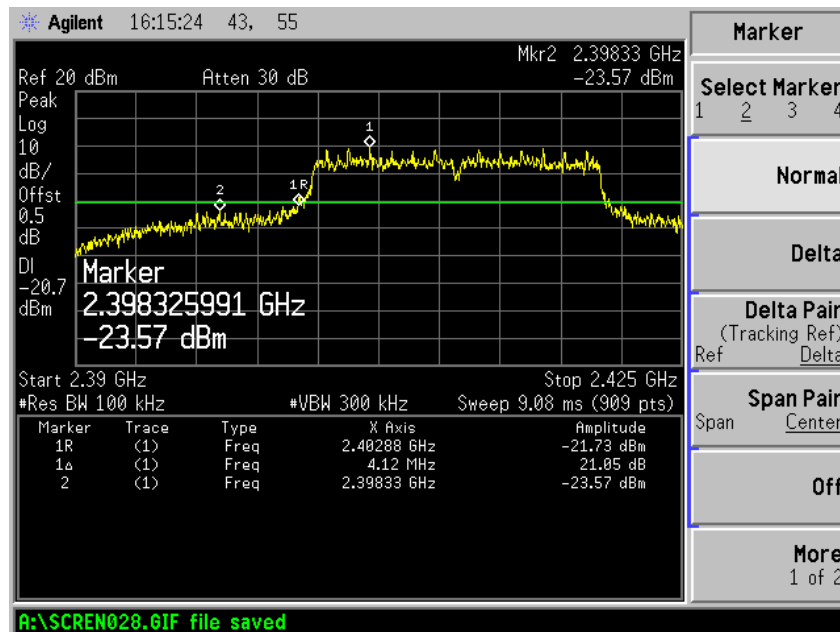




**For 802.11B High Channel Mode**

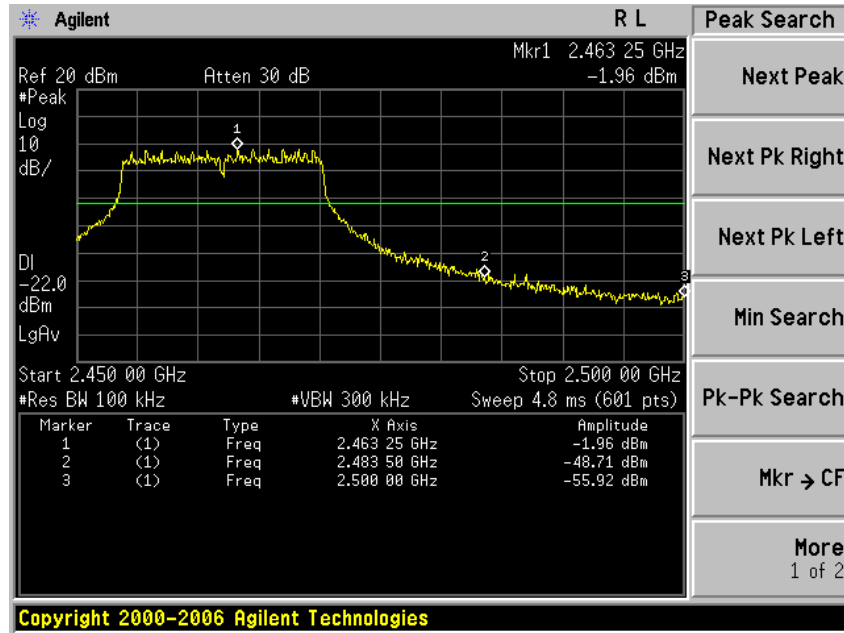


**For 802.11G Low Channel Mode**

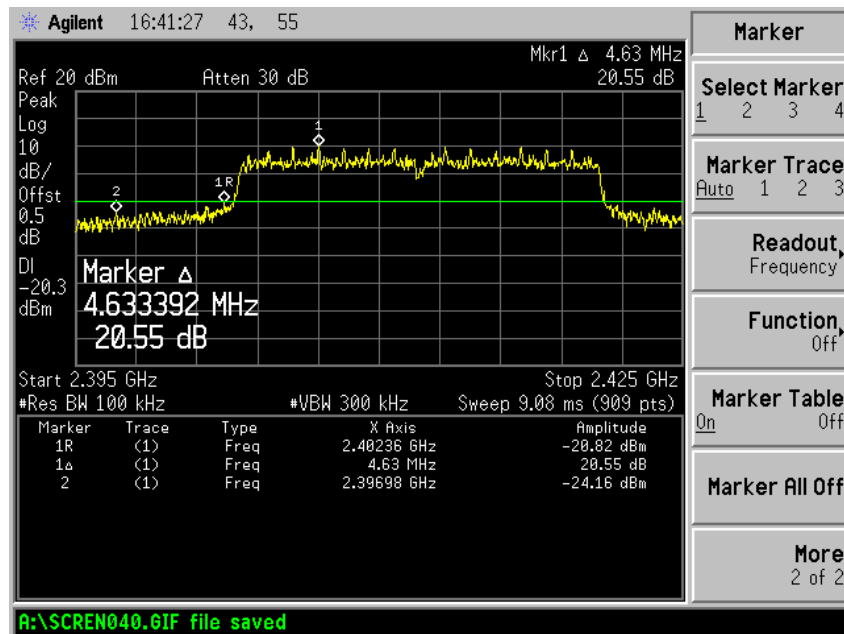




**For 802.11G High Channel Mode**

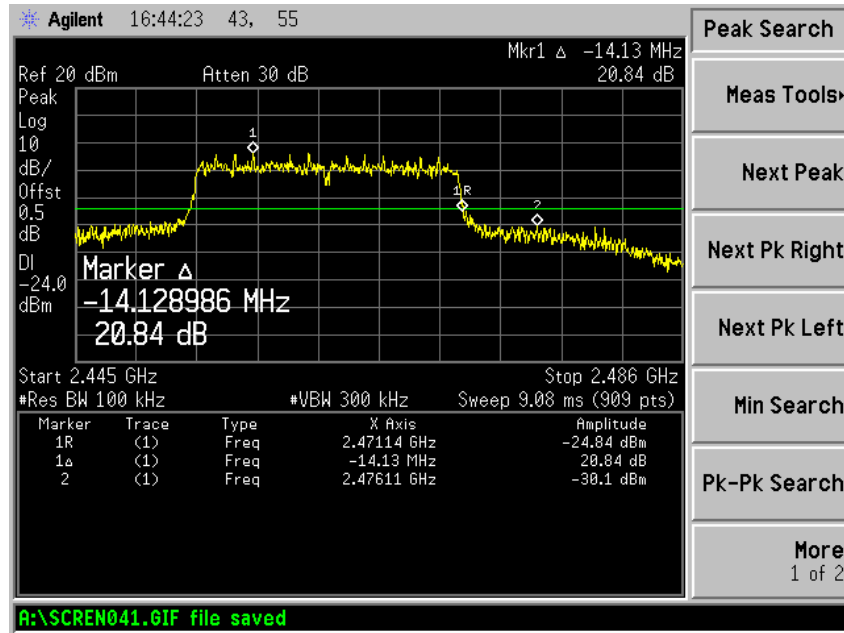


**For 802.11N – HT20 Low Channel Mode**

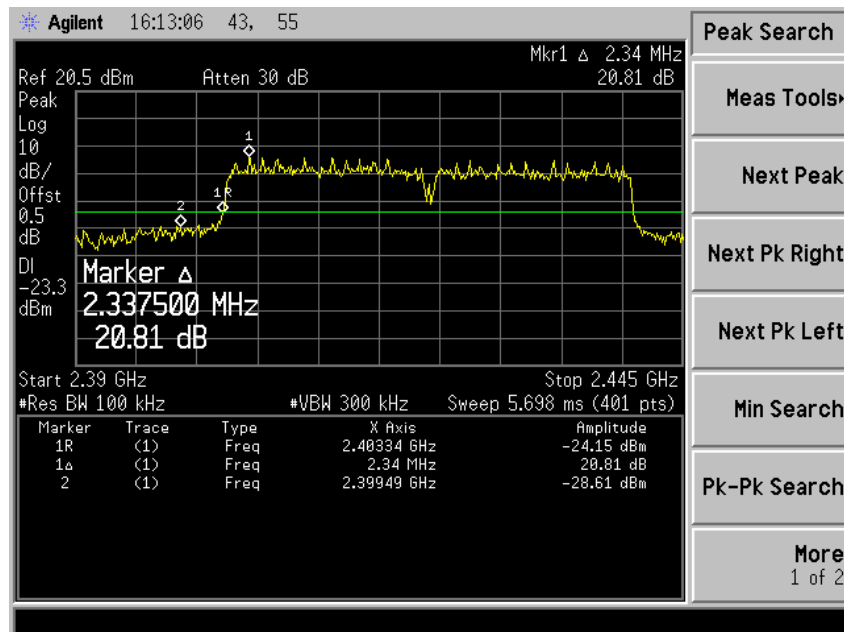




**For 802.11N – HT20 High Channel Mode**

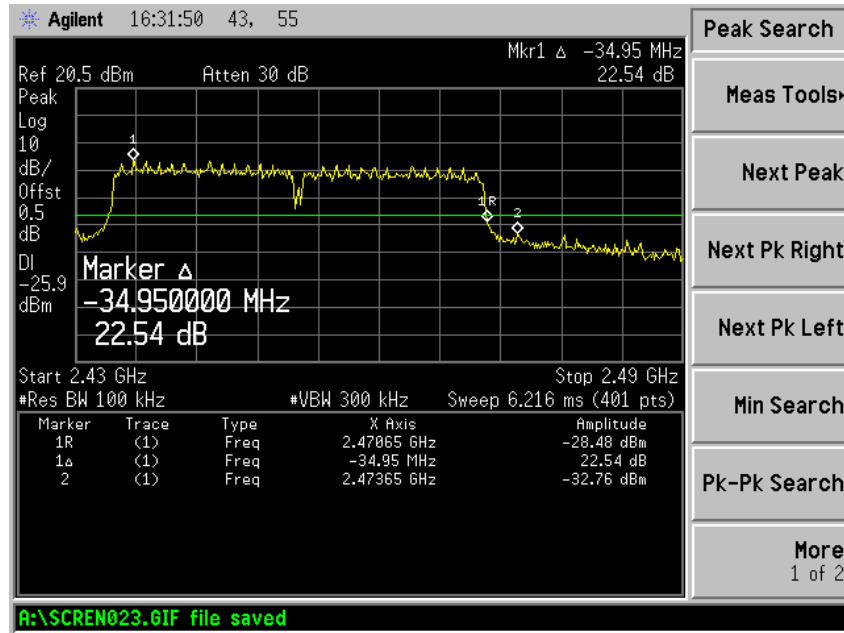


**For 802.11N – HT40 Low Channel Mode**





**For 802.11N – HT40 High Channel Mode**





#### 4.4 Maximum Output Power

Test Requirement:	FCC part 15 section 15.247 (b3)
Test Method:	ANSI C63.4:2003
Test Date:	2013-08-02
Mode of Operation:	Transmitting continuously mode
Detector Function:	Peak
Measurement BW:	RBW 1MHz ; VBW 3MHz

#### Test Procedure :

According to section 15.247(b)-power output of the KDB-558074 (2013), the measurement procedure PK2 was used, the following is the measurement procedure.

1. Set the span  $\geq 1.5 \times$  DTS bandwidth (6dB bandwidth).
2. Set RBW = 1 MHz, Set VBW =3 MHz.
3. Detector = peak; sweep time =auto couple.
4. Trace mode = max hold; allow the trace to fully stabilize.
5. Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak detector). If the instrument does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS bandwidth.

**Result : PASS**

*Transmitting Mode: Transmits continuously*

Test mode	Frequency MHz	Output Power dBm	Output Power mW	Limit mW
802.11b 1Mbps	2412	10.70	11.75	1000
	2437	10.55	11.35	1000
	2462	10.79	11.99	1000
802.11g 6Mbps	2412	10.27	10.64	1000
	2437	10.15	10.35	1000
	2462	10.01	10.02	1000
802.11n – HT20 MCS0	2412	10.40	10.96	1000
	2437	10.32	10.76	1000
	2462	10.37	10.89	1000
802.11n – HT40 MSC0	2422	11.32	13.55	1000
	2437	10.42	11.02	1000
	2452	8.71	7.43	1000

Note: Above testing data is base on the cable loss which between antenna port and spectrum is 0.2dB

**Limits for Maximum Output Power [ Section 15.247 (b3)]:**

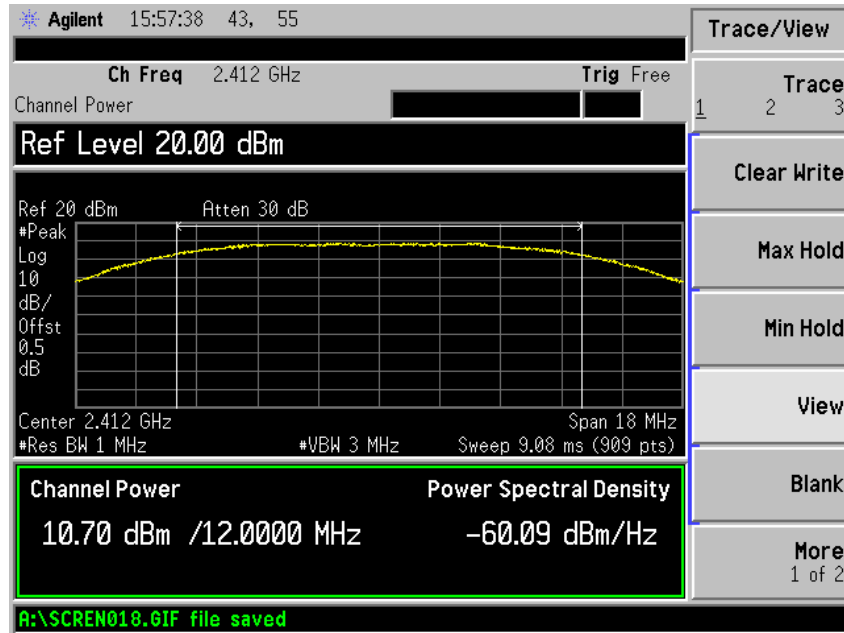
For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.



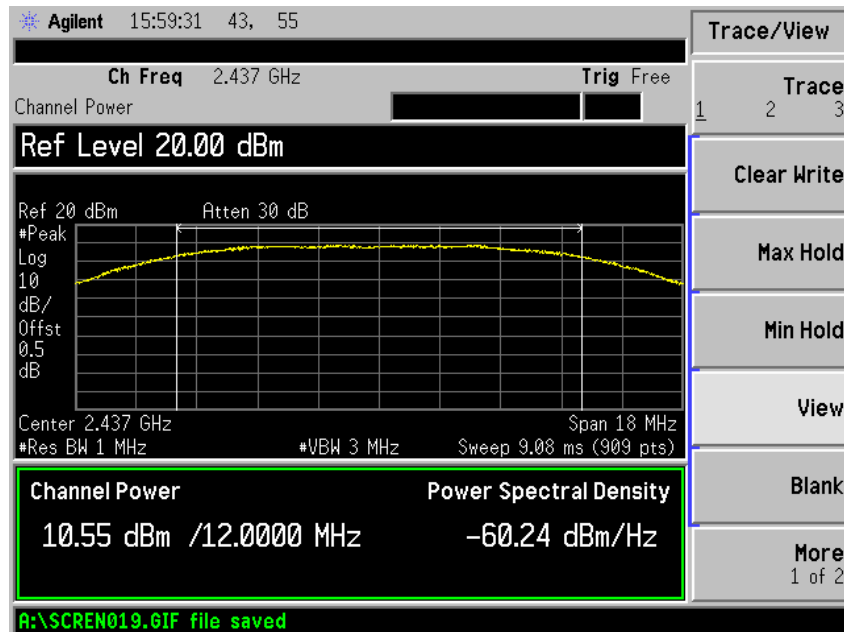


**For 802.11B Mode**

**Result data graph shows Low channel conducted power = 10.70dBm**

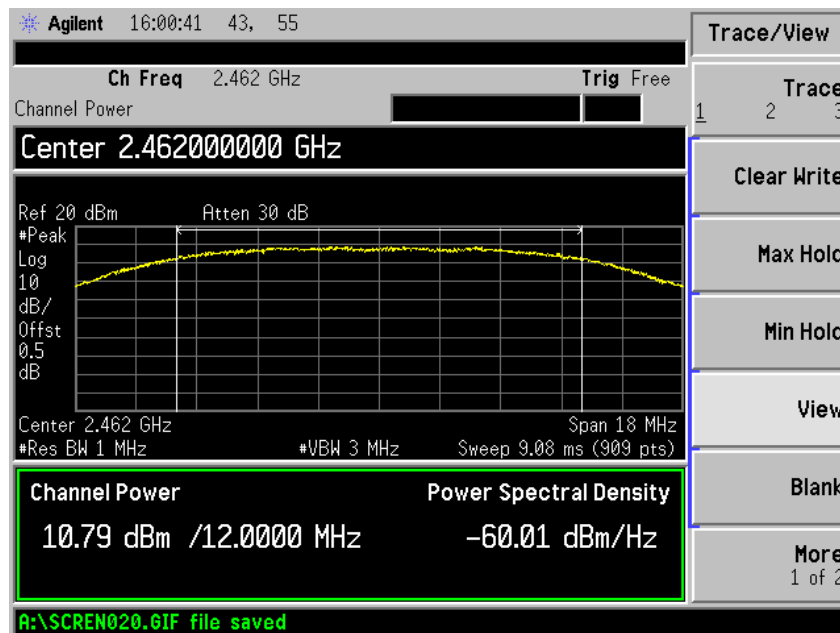


**Result data graph shows middle channel conducted power = 10.55dBm**





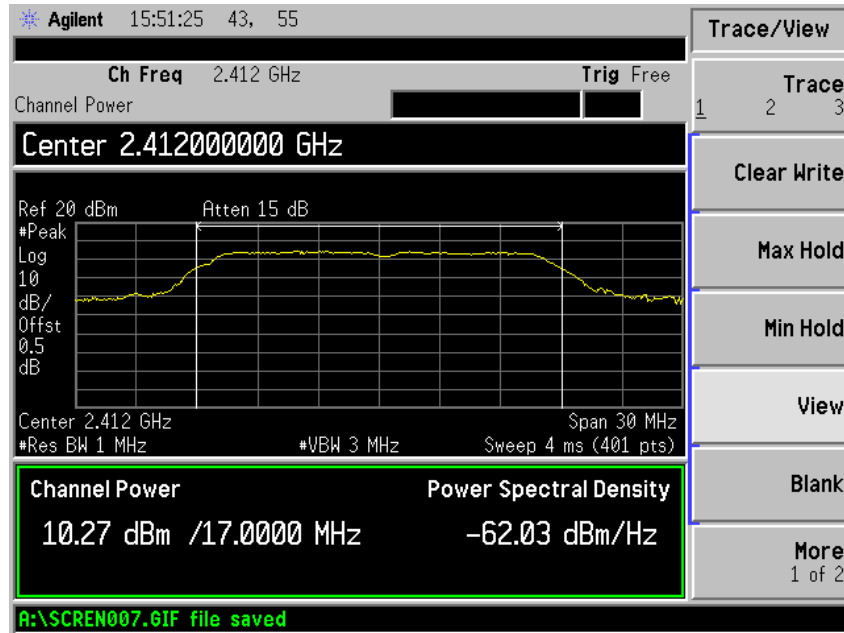
Result data graph shows high channel conducted power = 10.79dBm



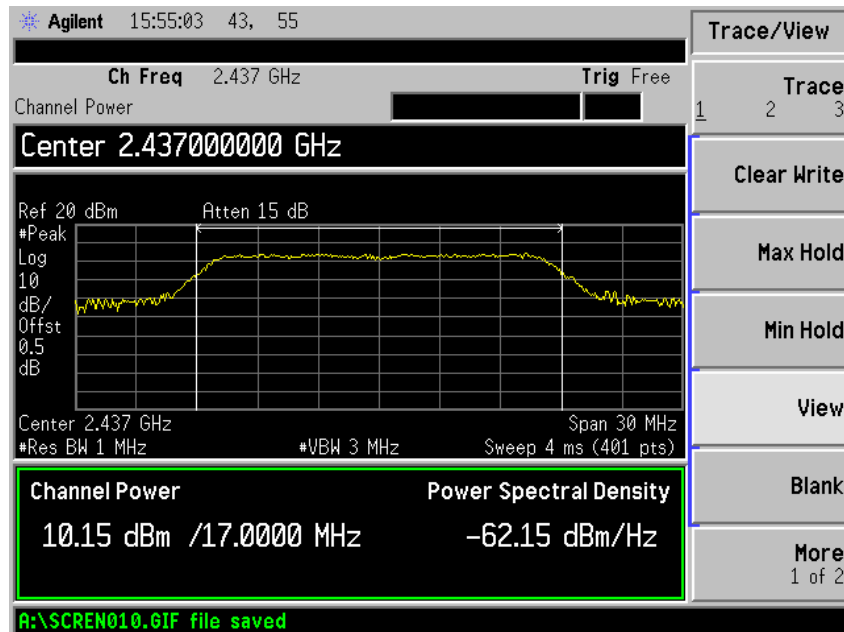


**For 802.11G Mode**

**Result data graph shows Low channel conducted power = 10.27dBm**

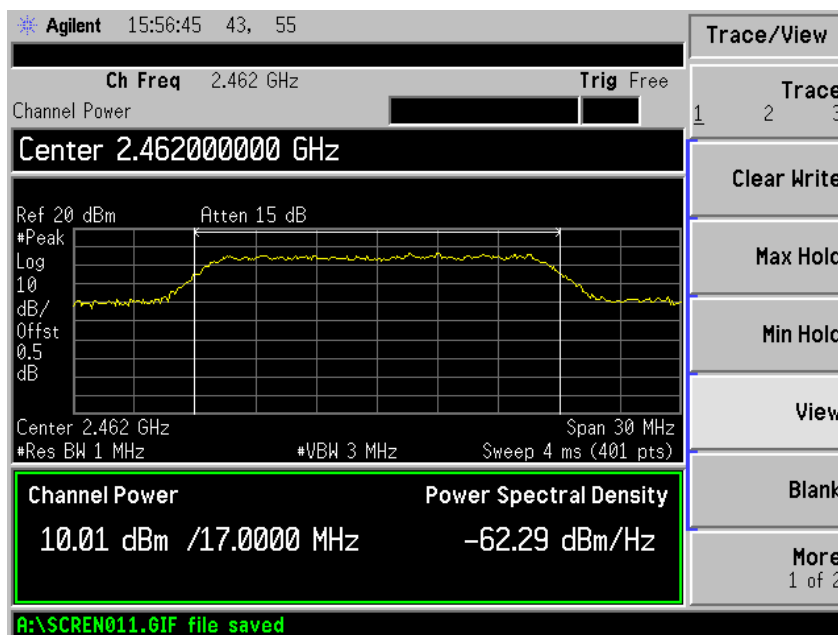


**Result data graph shows middle channel conducted power = 10.15dBm**





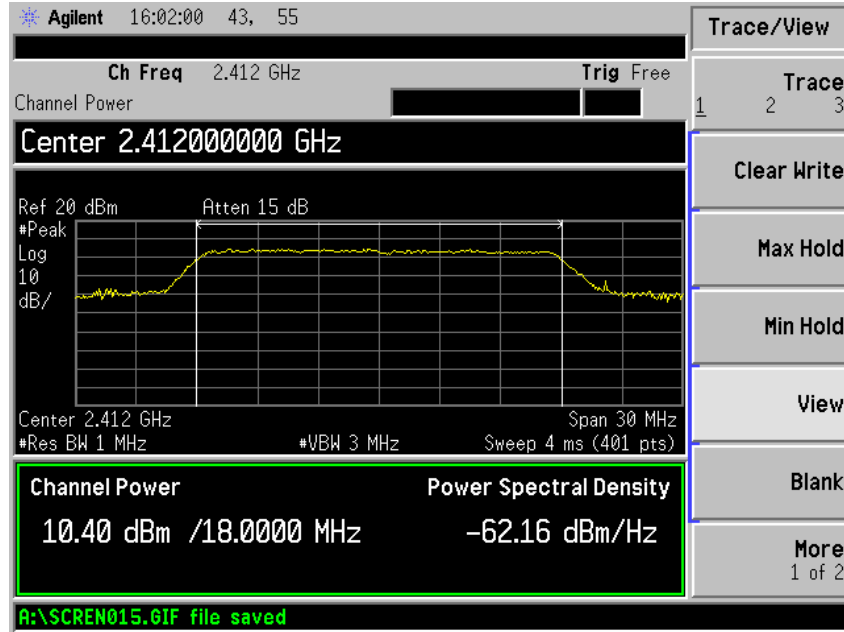
Result data graph shows high channel conducted power = 10.01dBm



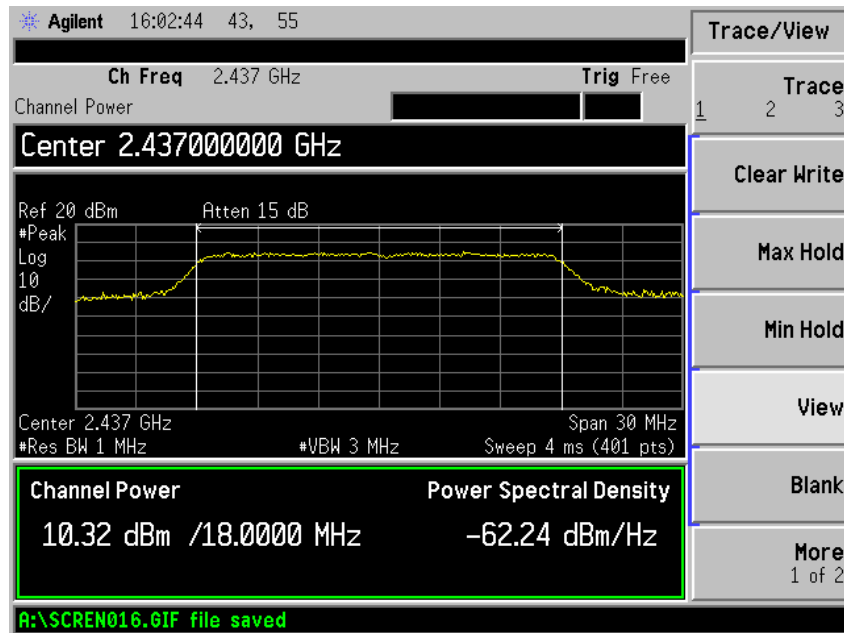


**For 802.11N – HT20 Mode**

**Result data graph shows Low channel conducted power = 10.40dBm**

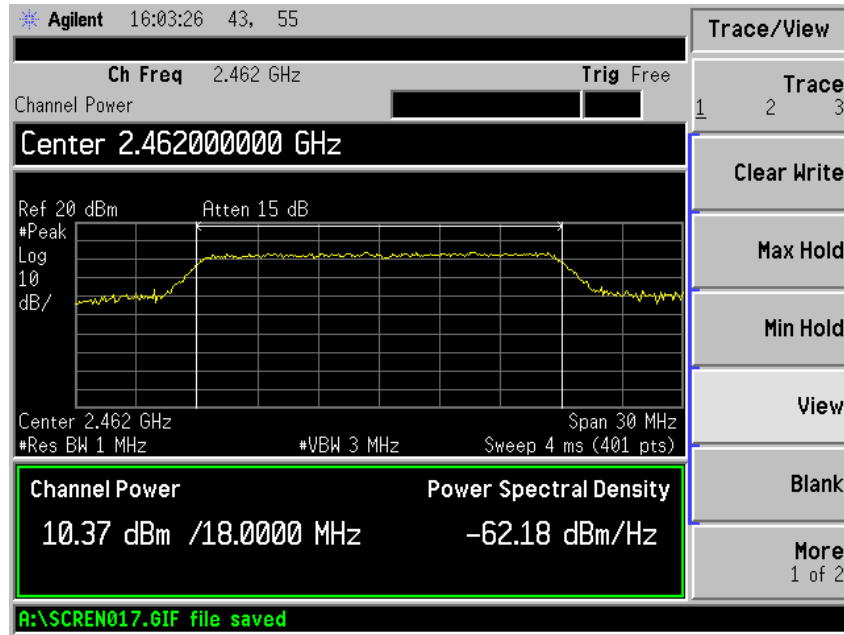


**Result data graph shows middle channel conducted power = 10.32dBm**





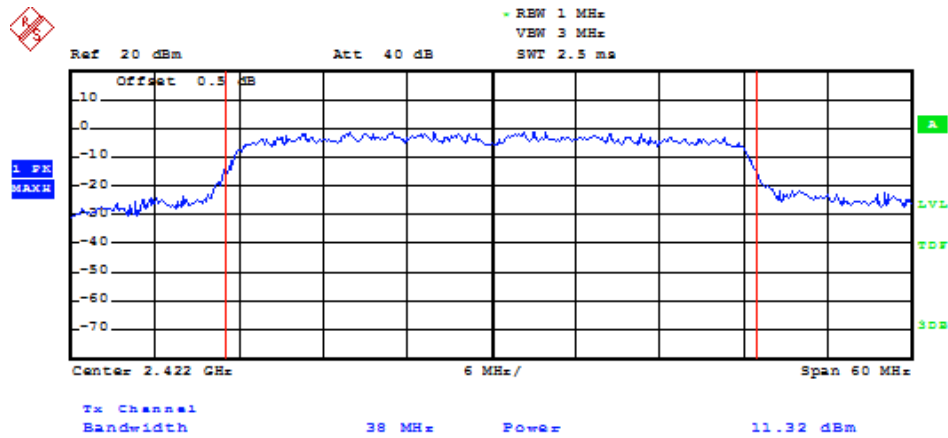
Result data graph shows high channel conducted power = 10.37dBm



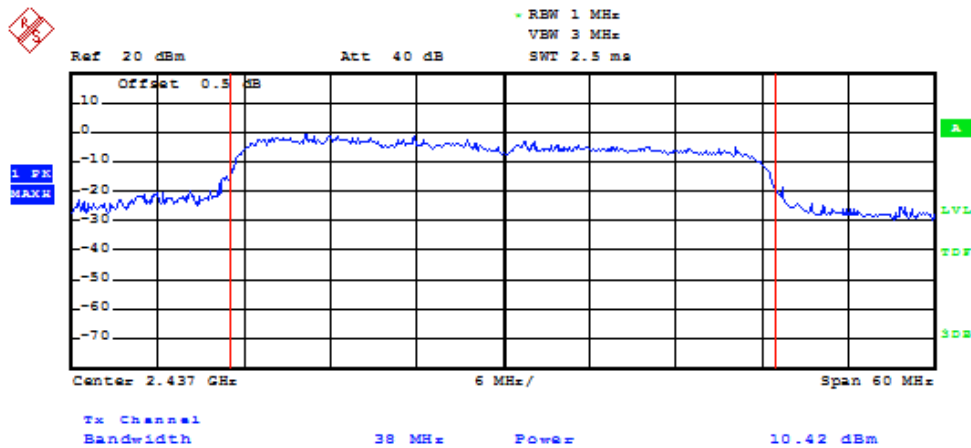


**For 802.11N – HT40 Mode**

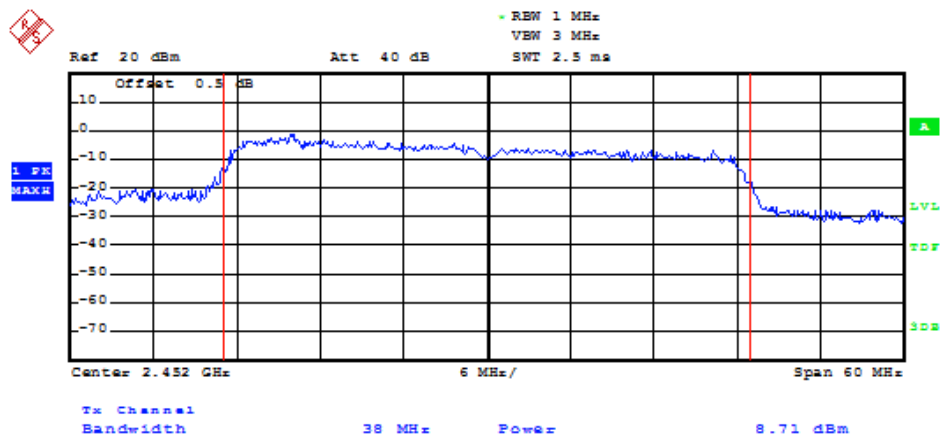
**Result data graph shows Low channel conducted power = 11.32dBm**



**Result data graph shows middle channel conducted power = 10.42dBm**



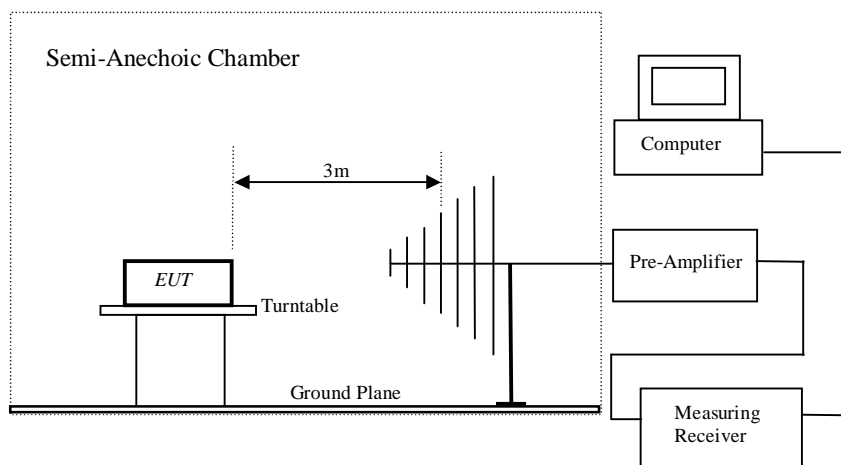
**Result data graph shows high channel conducted power = 8.71dBm**



#### 4.5 Out of Band Emissions and Emissions in Restricted Bands

Test Requirement:	FCC part 15 section 15.247 (d )
Test Method:	ANSI C63.4:2003
Test Date:	2013-08-02
Mode of Operation:	Transmitting continuously mode
Detector Function:	Peak
Measurement BW:	RBW 100KHz ; VBW 300KHz

#### Test Setup:







**Result : PASS**

**Out of Frequency Band Emissions:**

For out of band emissions that are close to or exceed 20dB attenuation requirement, and emission falls into restricted band, radiated emission was performed in order to show compliance with the general radiated emission requirement.

**Result Summary:**

Refer to the emission data graph, result shows that the significant emissions detected are with more than 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

**Limits for Out of Frequency Band Emission [ Section 15.247 (d) ]:**

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. Attenuation below the general limits specified in Section 15.209(a) is not required.

**Limit for Radiated Emission Falling in Restricted Bands [ Section 15.209 ]:**

Frequency (MHz)	Field Strength [ $\mu\text{V}/\text{m}$ ]	Field Strength [dB $\mu\text{V}/\text{m}$ ]
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

Radiated emissions, which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209.

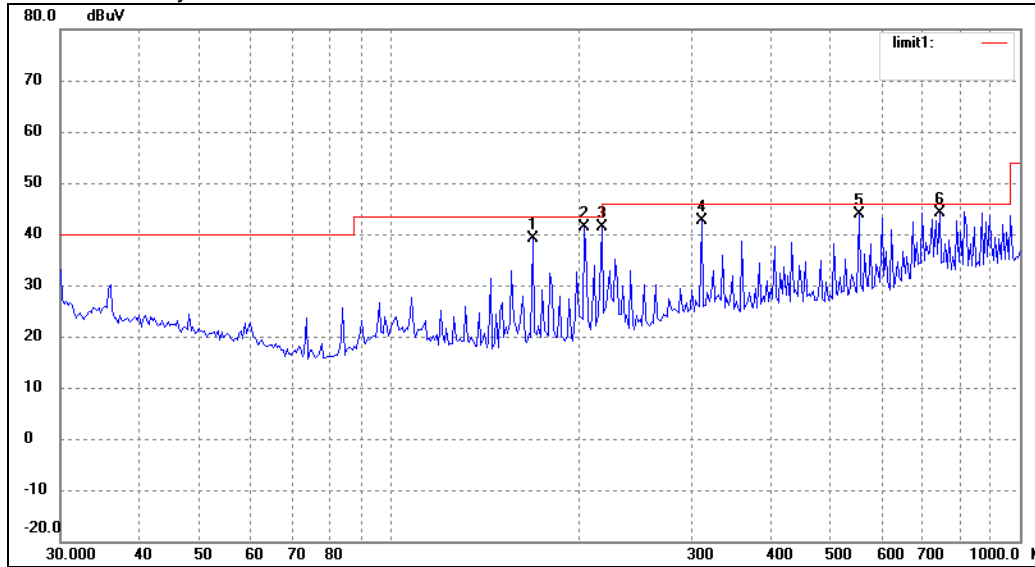
The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Below 1GHz emissions  
Vertical Polarity



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	168.414	35.38	3.69	39.07	43.50	-4.43	QP
2	203.523	36.45	4.87	41.32	43.50	-2.18	QP
3	216.783	35.64	5.72	41.36	46.00	-4.64	QP
4	312.179	32.23	10.36	42.59	46.00	-3.41	QP
5	554.825	30.53	13.27	43.80	46.00	-2.20	QP
6	744.866	26.12	17.95	44.07	46.00	-1.93	QP

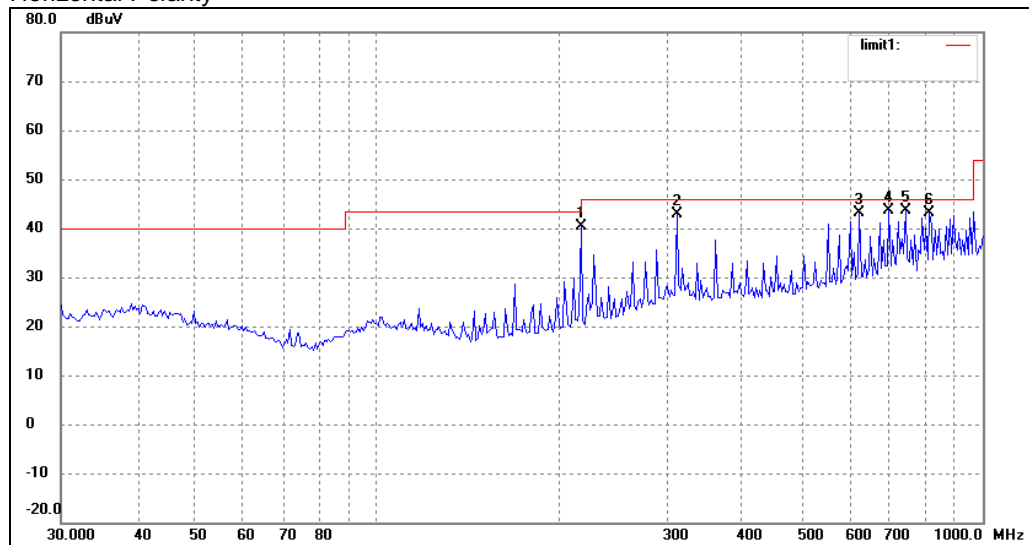
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Below 1GHz emissions  
Horizontal Polarity



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	216.783	34.59	5.72	40.31	46.00	-5.69	QP
2	312.179	32.48	10.36	42.84	46.00	-3.16	QP
3	625.078	28.80	14.23	43.03	46.00	-2.97	QP
4	699.305	27.91	15.73	43.64	46.00	-2.36	QP
5	744.866	25.59	17.95	43.54	46.00	-2.46	QP
6	815.968	26.50	16.70	43.20	46.00	-2.80	QP

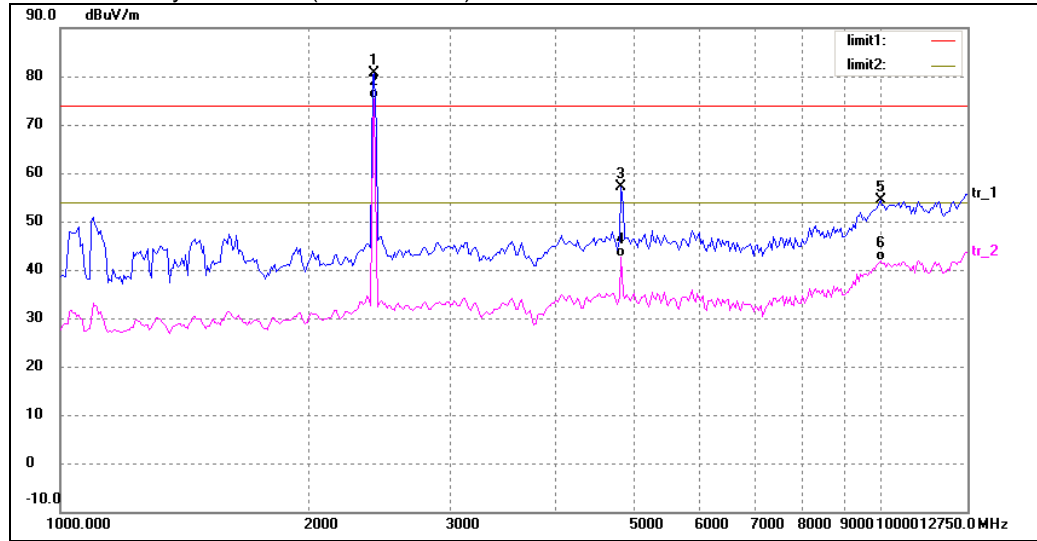
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Vertical Polarity – 802.11b (Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3	4821.757	56.47	0.57	57.04	74.00	-16.96	peak
5	9985.762	47.04	7.28	54.32	74.00	-19.68	peak

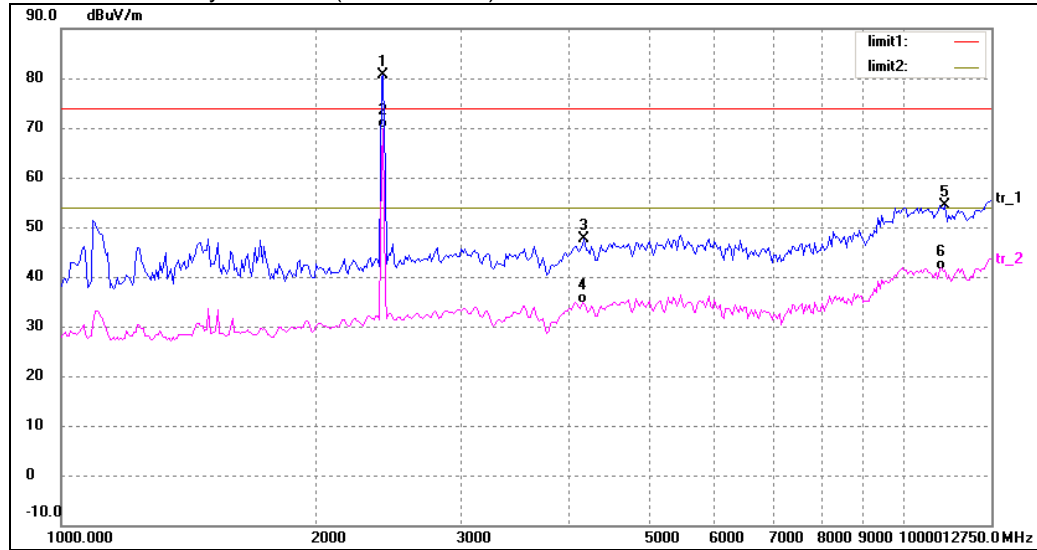
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11b (Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3	4181.159	47.96	-0.45	47.51	74.00	-26.49	peak
2	11226.249	45.97	8.40	54.37	74.00	-19.63	peak

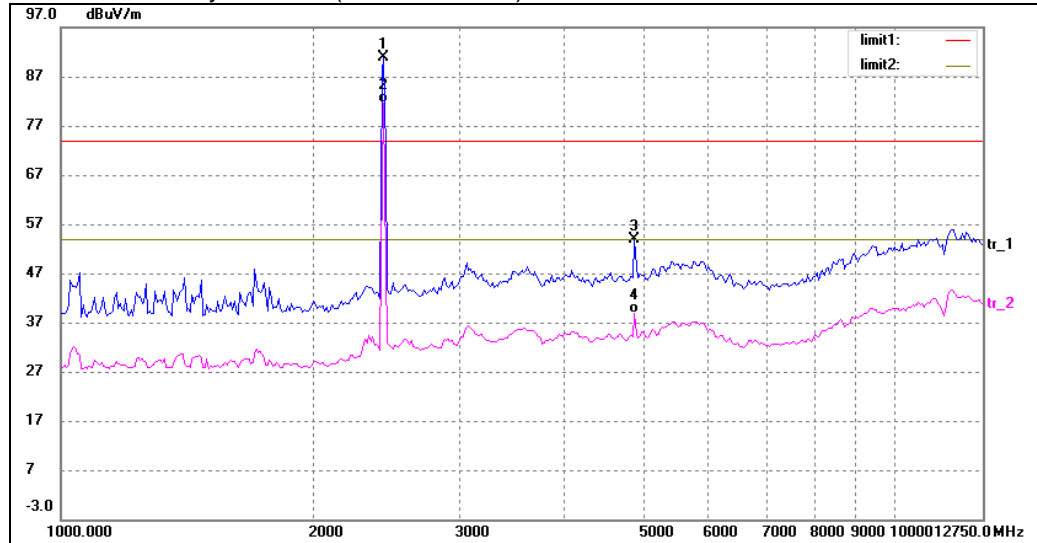
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11b (Middle Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3	4871.103	53.31	0.64	53.95	74.00	-20.05	peak

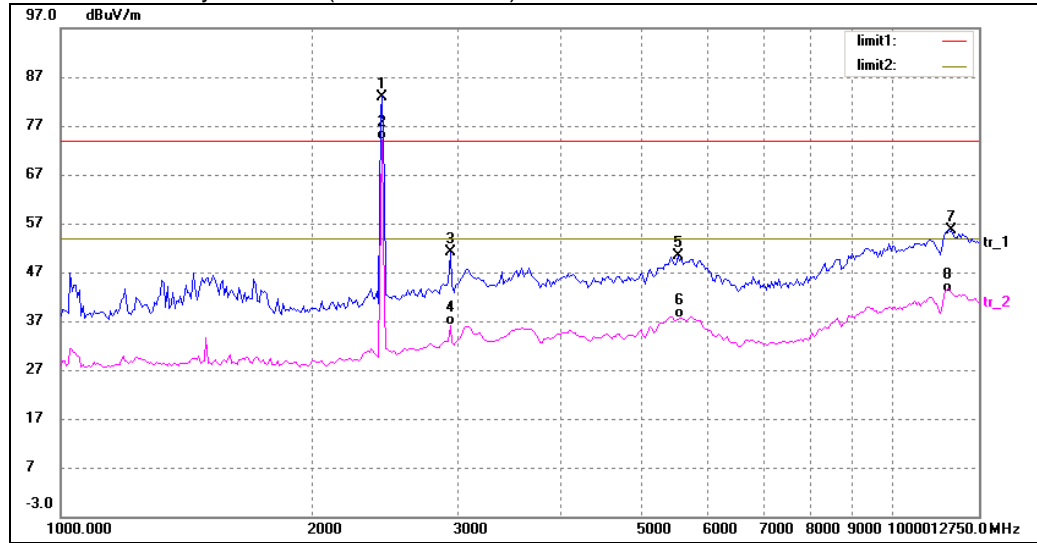
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11b (Middle Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3	2942.635	53.83	-2.63	51.20	74.00	-22.80	peak
5	5532.263	47.88	2.56	50.44	74.00	-23.56	peak

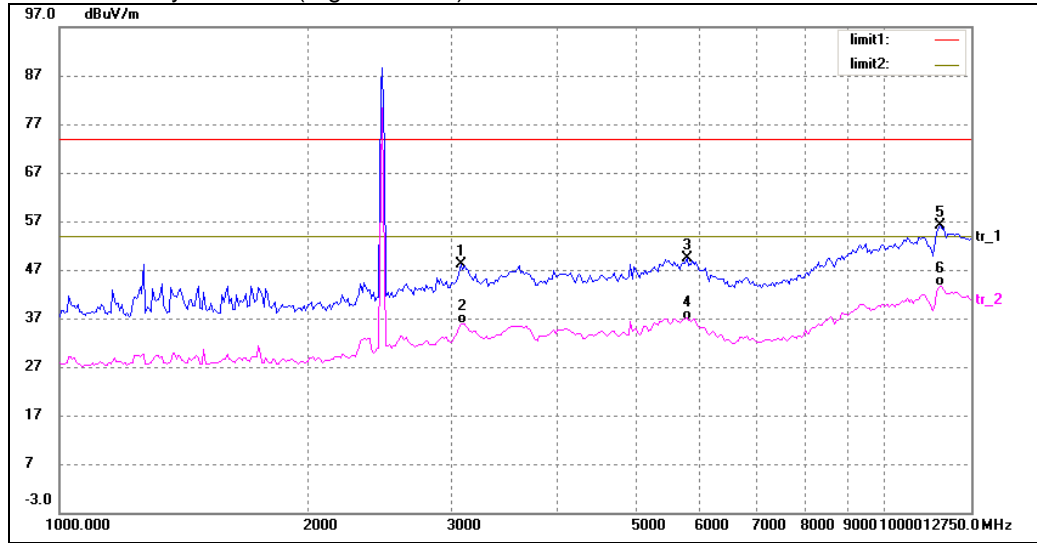
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Vertical Polarity -802.11b (High Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3064.958	50.50	-2.41	48.09	74.00	-25.91	peak
3	5762.235	47.46	1.96	49.42	74	-24.58	peak

Remark: Only background noise was measured from 16GHz-26GHz.

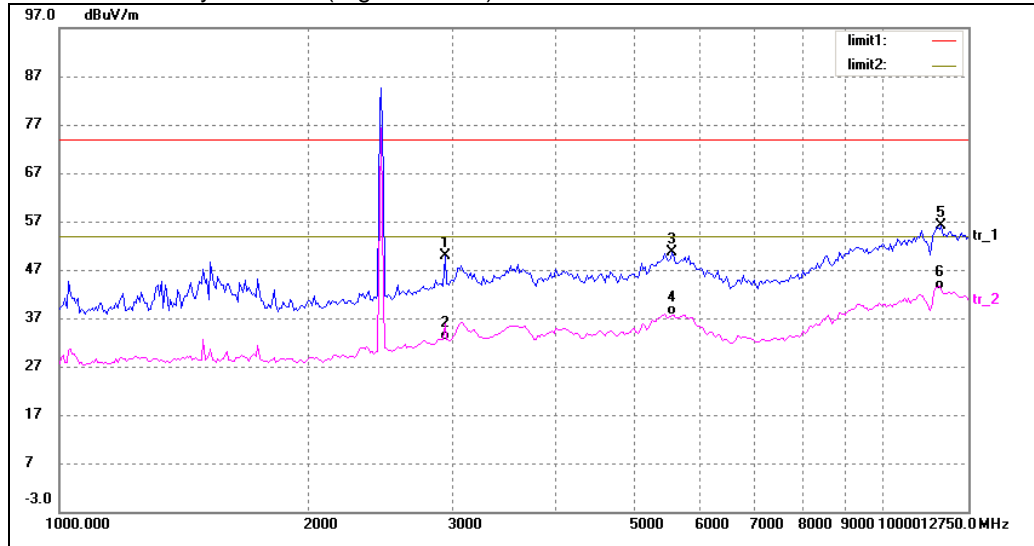




**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11b (High Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2942.635	52.48	-2.63	49.85	74.00	-24.15	peak
3	5560.500	48.11	2.55	50.66	74.00	-23.34	peak

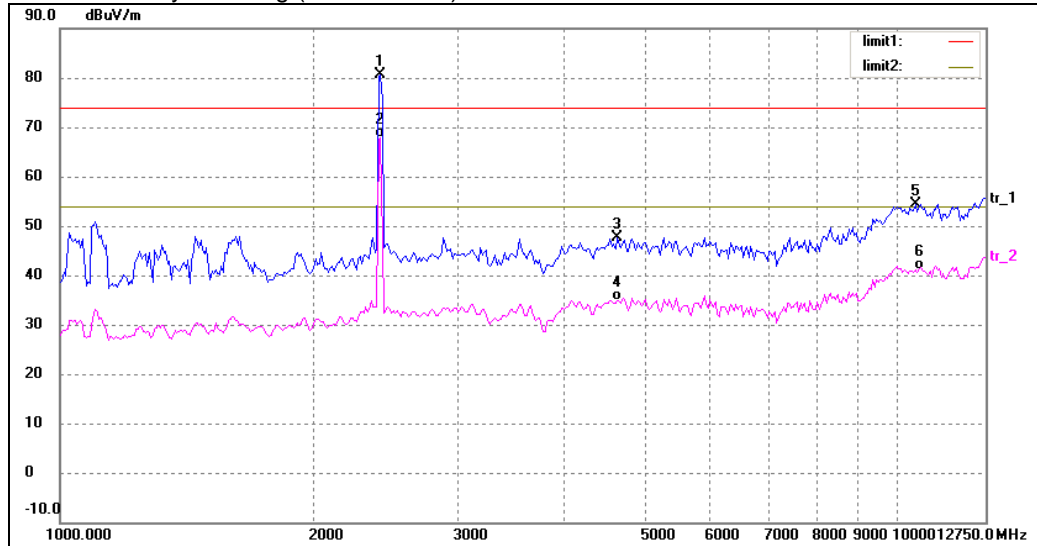
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Vertical Polarity -802.11g (Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	4629.319	47.33	0.27	47.60	74	-26.40	peak
5	10507.307	46.51	7.82	54.33	74.00	-19.67	peak

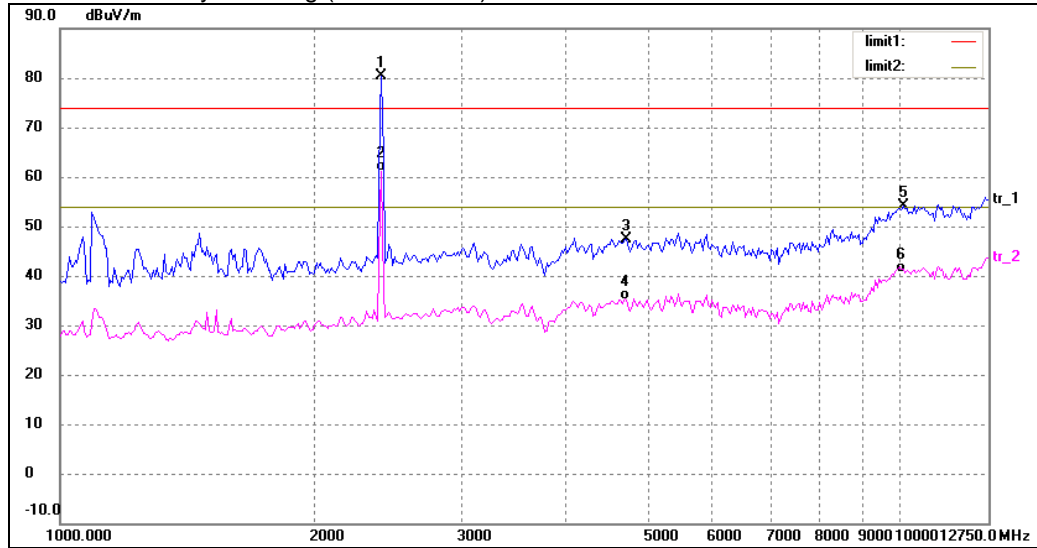
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11g (Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3	4724.558	46.98	0.42	47.40	74.00	-26.60	Peak
5	10087.958	46.79	7.39	54.18	74.00	-19.82	Peak

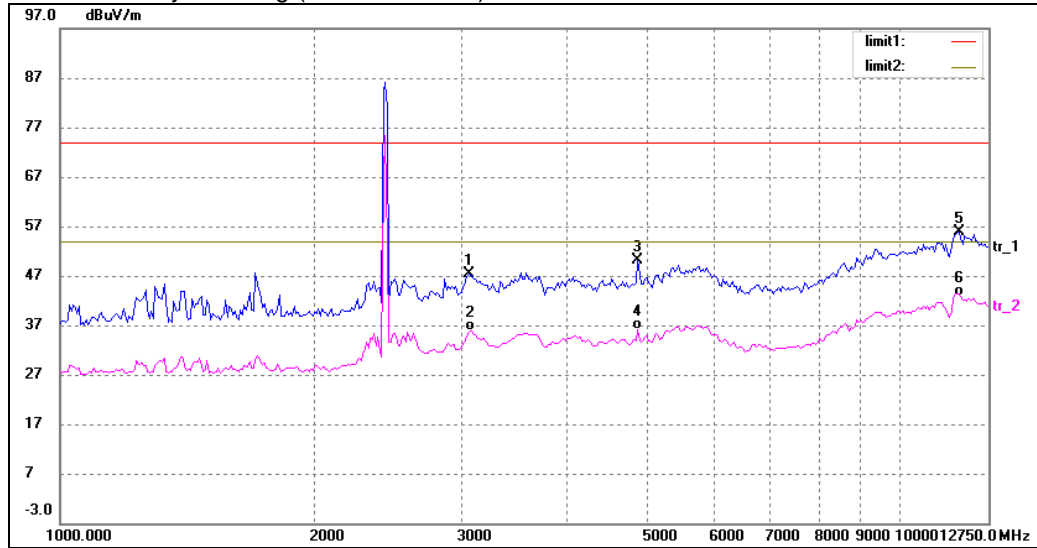
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Vertical Polarity -802.11g (Middle Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3064.958	49.77	-2.41	47.36	74.00	-26.64	peak
3	4871.103	49.46	0.64	50.10	74.00	-23.90	peak

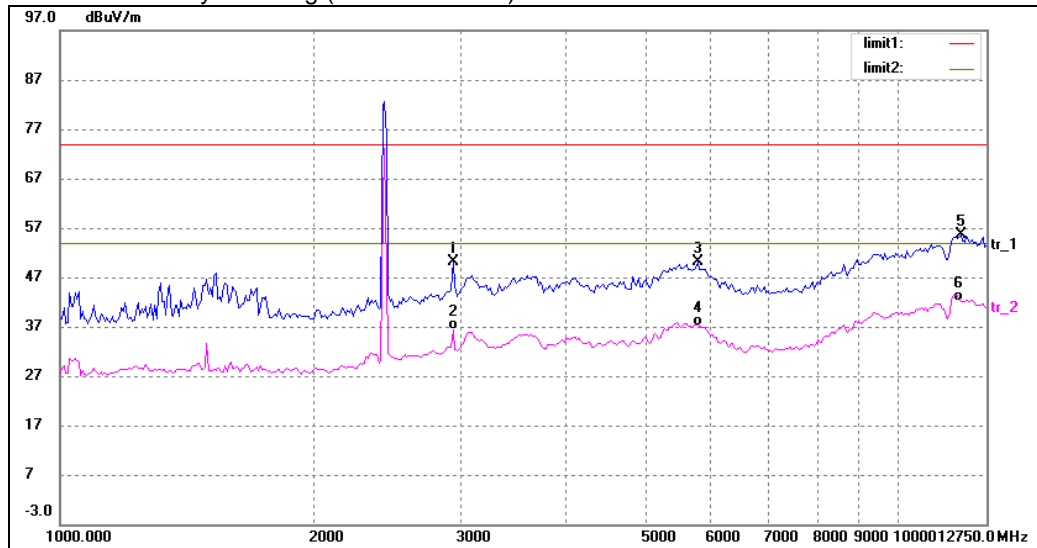
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11g (Middle Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2942.635	52.88	-2.63	50.25	74.00	-23.75	peak
3	5762.235	47.55	2.49	50.04	74.00	-23.96	peak

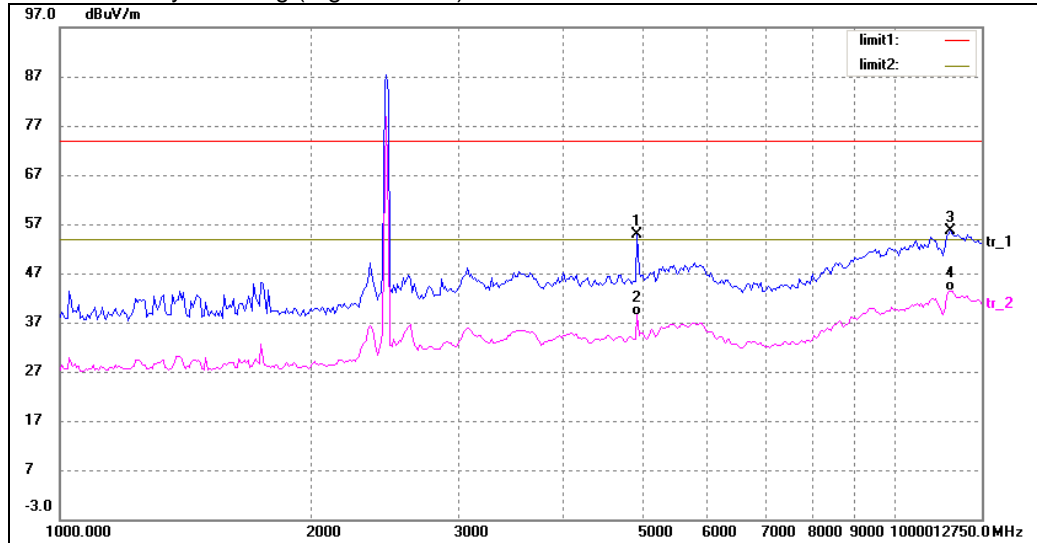
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Vertical Polarity -802.11g (High Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.955	54.15	0.71	54.86	74.00	-19.14	peak
3	11692.916	46.74	8.93	55.67	74.00	-18.33	peak

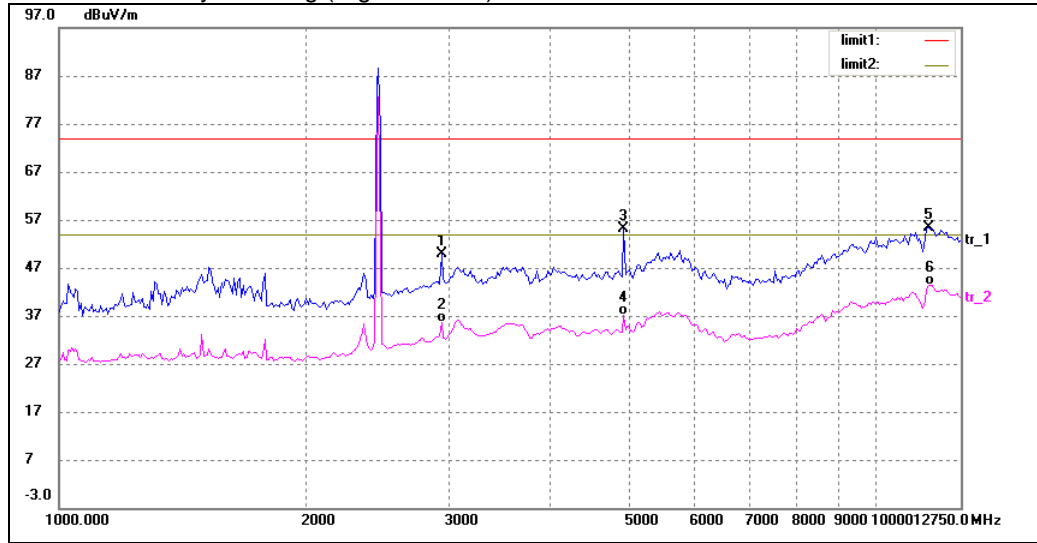
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11g (High Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.955	54.49	0.71	55.20	74.00	-18.80	peak
3	11633.538	46.51	8.88	55.39	74.00	-18.61	peak

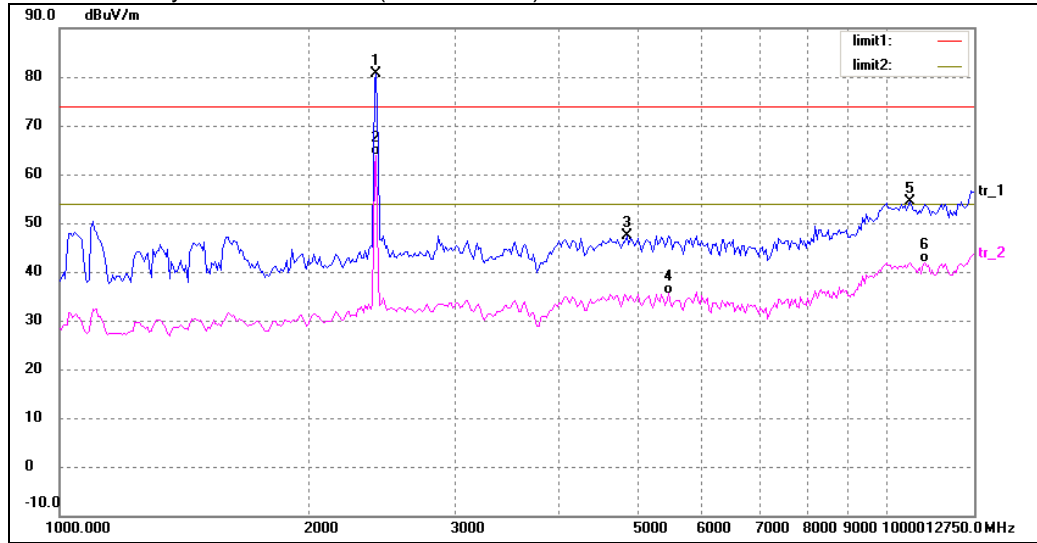
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Vertical Polarity -802.11n – HT20(Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3	4846.367	46.72	0.60	47.32	74.00	-26.68	peak
5	10669.019	46.39	7.92	54.31	74.00	-19.69	peak

Remark: Only background noise was measured from 16GHz-26GHz.

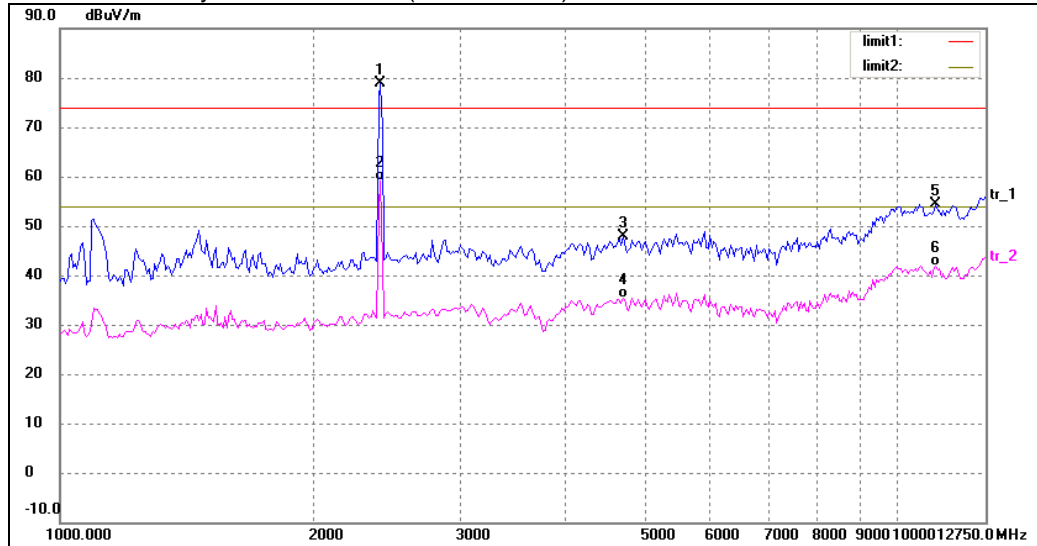




**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11n – HT20(Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3	4700.566	47.43	0.38	47.81	74.00	-26.19	peak
5	11112.522	46.22	8.26	54.48	74.00	-19.52	peak

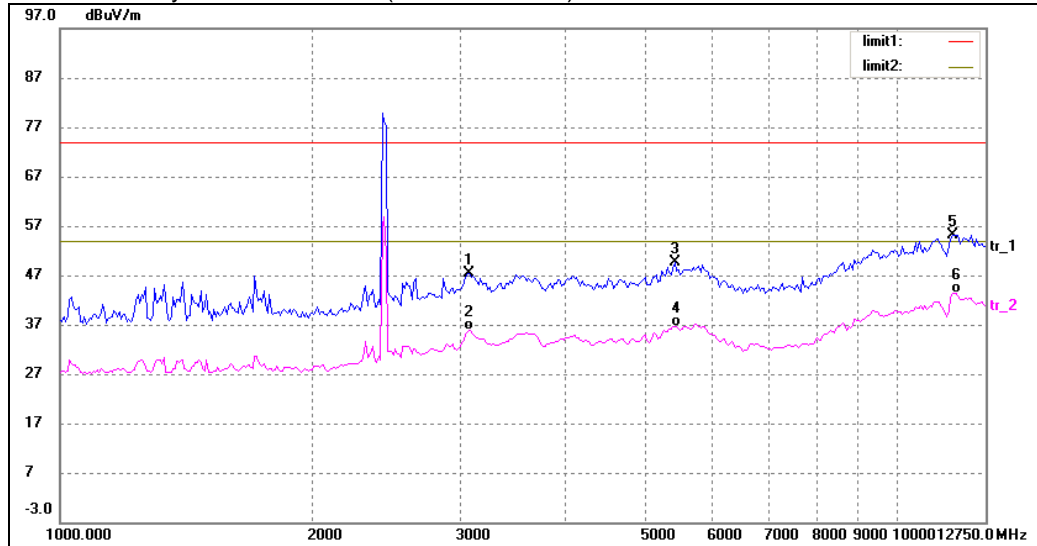
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Vertical Polarity -802.11n – HT20 (Middle Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3080.601	49.85	-2.39	47.46	74.00	-26.54	peak
3	5420.742	48.15	1.37	49.52	74.00	-24.48	peak

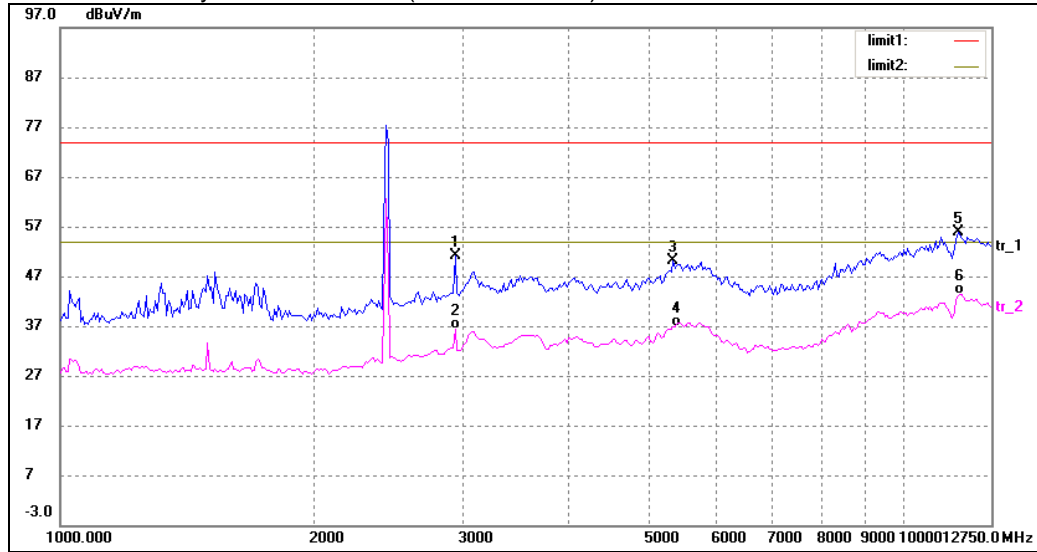
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11n – HT20(Middle Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2942.635	53.86	-2.63	51.23	74.00	-22.77	peak
3	5338.579	48.00	2.01	50.01	74.00	-23.99	peak

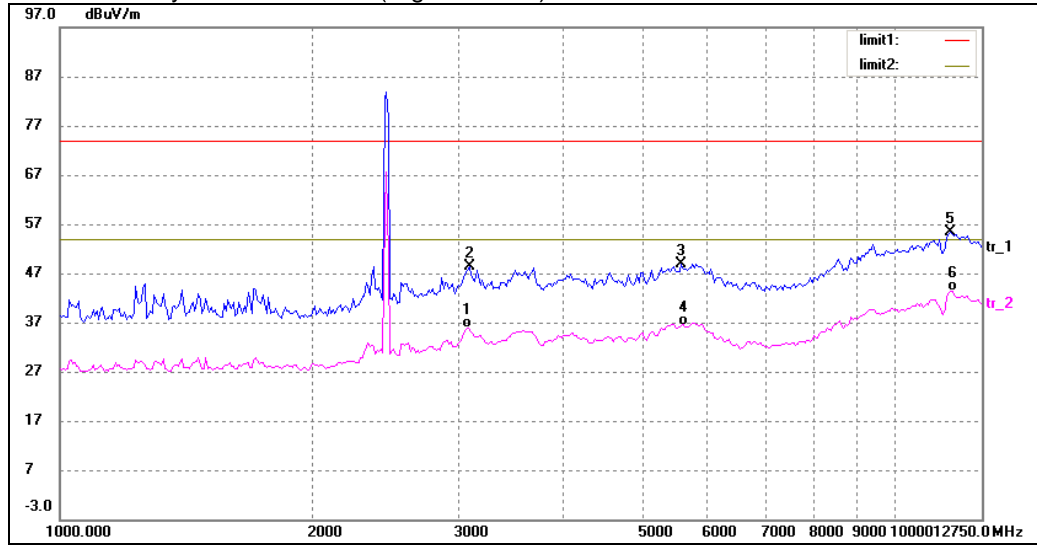
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Vertical Polarity -802.11n - HT20(High Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3096.325	50.68	-2.36	48.32	74.00	-25.68	peak
3	5560.500	47.19	1.58	48.77	74.00	-25.23	peak

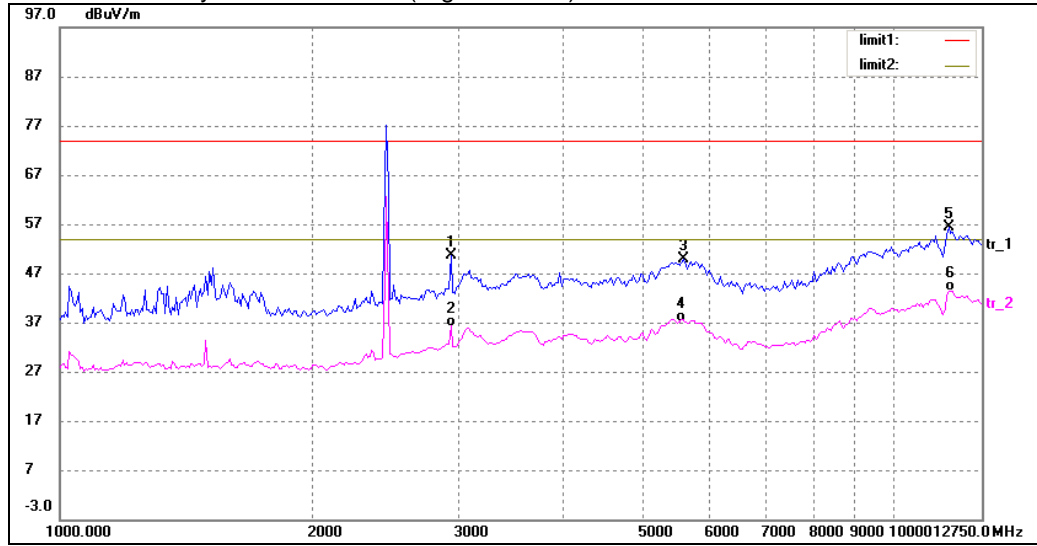
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11n - HT20 (High Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2942.635	53.15	-2.63	50.52	74.00	-23.48	peak
3	5588.881	47.22	2.54	49.76	74.00	-24.24	peak

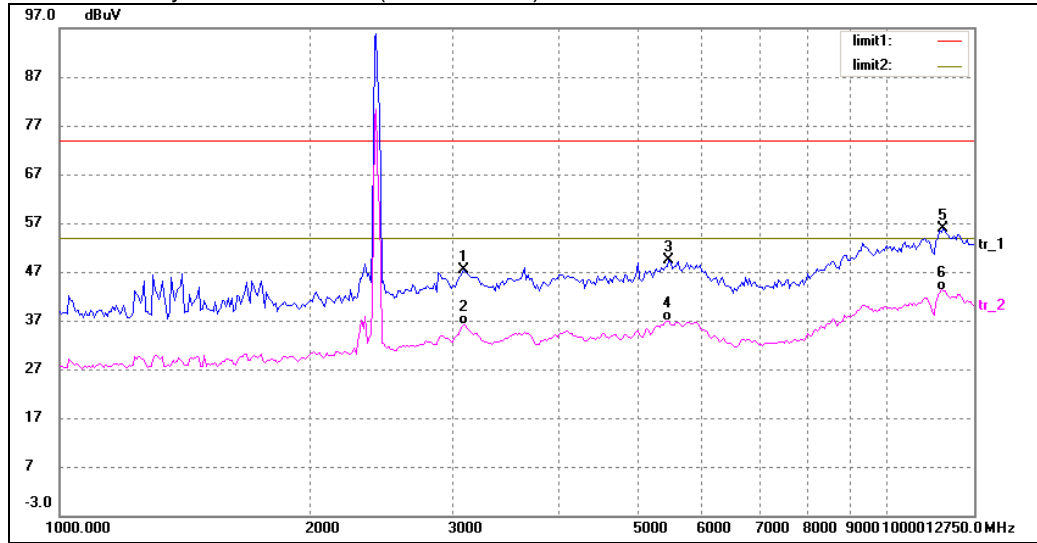
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Vertical Polarity -802.11n – HT40(Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3080.601	49.75	-2.39	47.36	74.00	-26.64	peak
3	5448.410	47.95	1.41	49.36	74.00	-24.24	peak

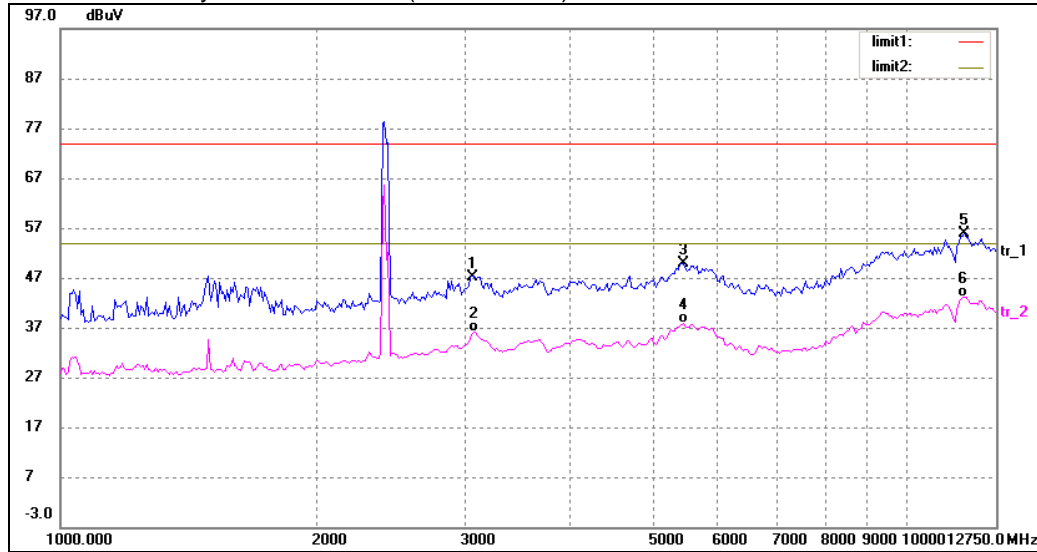
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11n – HT40(Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3064.958	49.66	-2.41	47.25	74.00	-26.75	peak
3	5448.410	47.51	2.40	49.91	74.00	-24.09	peak

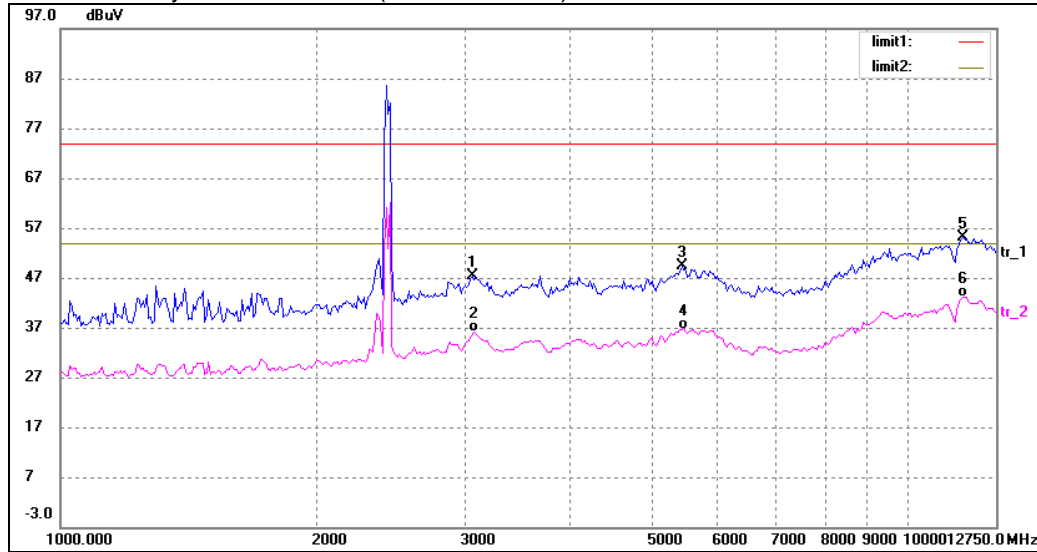
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Vertical Polarity -802.11n – HT40(Middle Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3064.958	49.81	-2.41	47.40	74.00	-26.60	peak
3	5420.742	47.90	1.37	49.27	74.00	-24.73	peak

Remark: Only background noise was measured from 16GHz-26GHz.

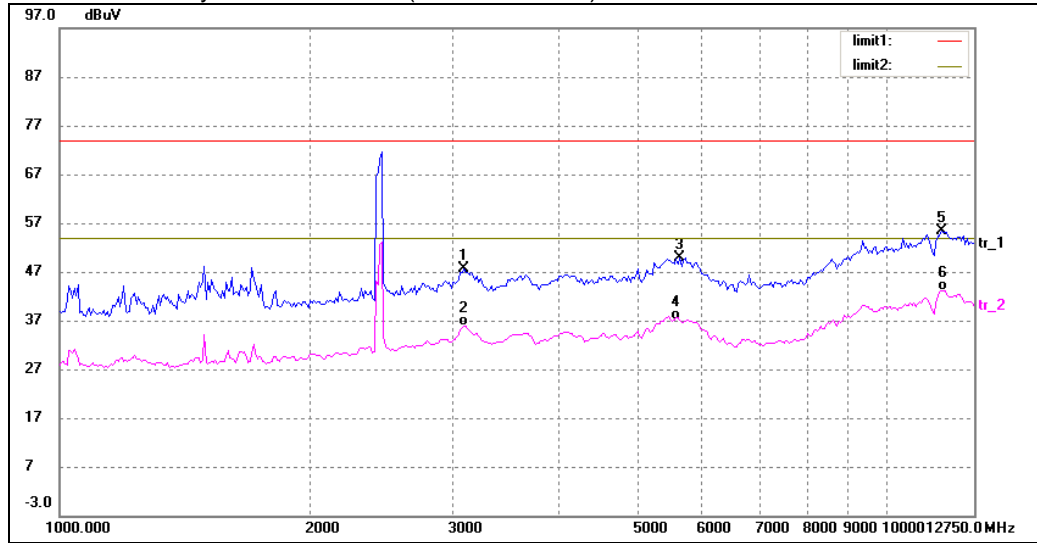




**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11n – HT40(Middle Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3080.601	50.00	-2.39	47.61	74.00	-26.39	peak
3	5617.407	47.45	2.53	49.98	74.00	-24.02	peak

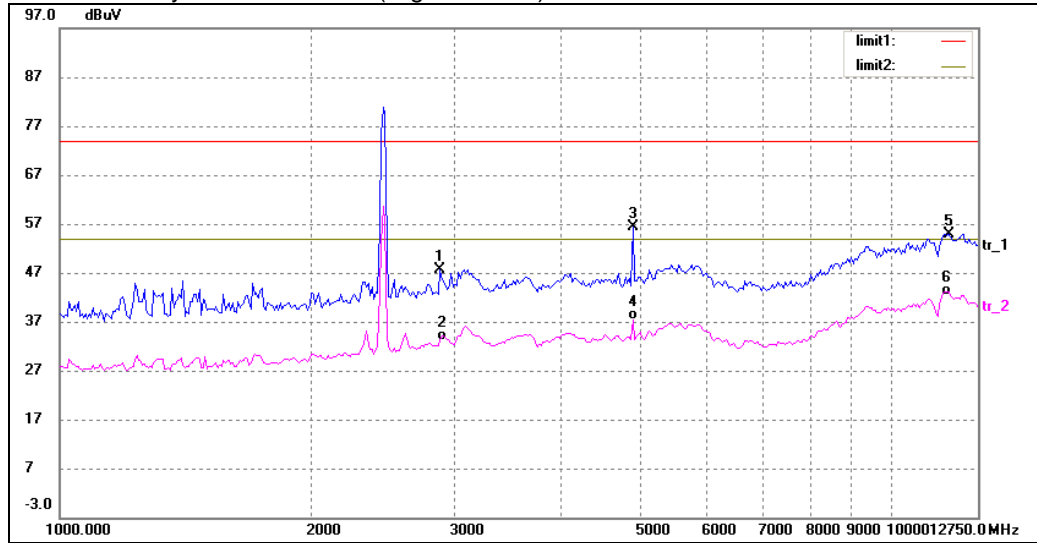
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Vertical Polarity -802.11n – HT40(High Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2868.674	50.36	-2.74	47.62	74.00	-26.38	peak
3	4895.966	55.75	0.68	56.43	74.00	-17.57	peak

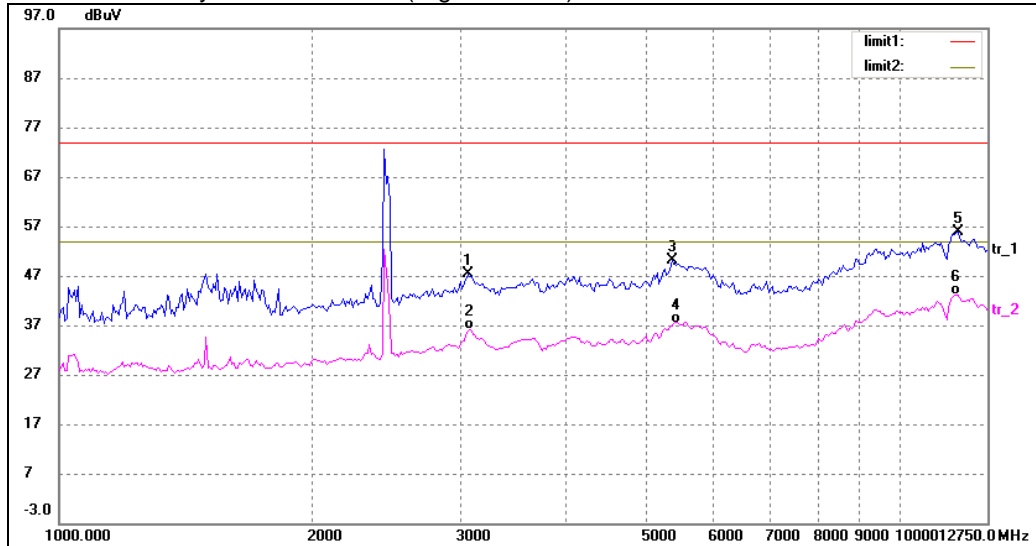
Remark: Only background noise was measured from 16GHz-26GHz.



**Result : PASS**

**All Emission and Emissions Fall into Restricted Band were recorded as below:**

Above 1GHz Emission test data  
Horizontal Polarity -802.11n – HT40(High Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3064.958	49.74	-2.41	47.33	74.00	-26.67	peak
3	5365.828	47.91	2.10	50.01	74.00	-23.99	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result Summary:

- 1) Communication mode: All other emissions are more than 20dB below FCC part 15.209 limits.
- 2) No further spurious emissions found between 30 MHz and lowest internal used/generated frequency and from 30MHz to 1GHz.
- 3) Test data is base on the worst case highest channel's emission data graph from 30MHz-26GHz.

Remarks:

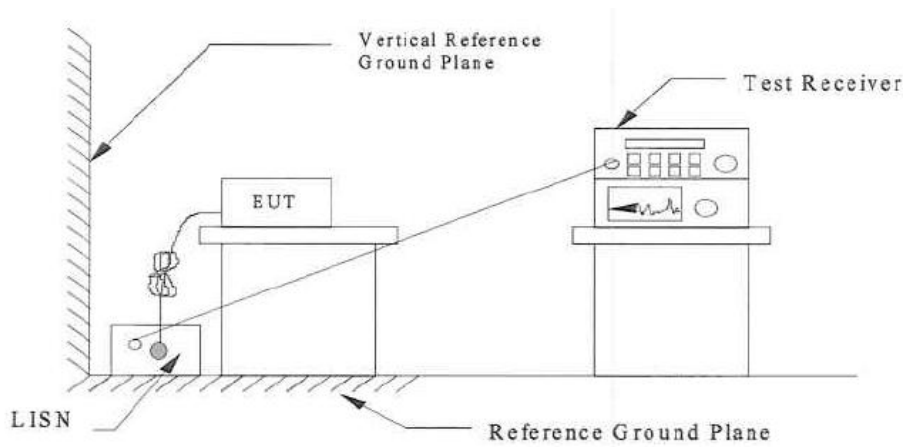
1. " \* " Radiated emissions which fall in the restricted bands as defined in Section 15.205(a).
2. Emission level with more than 20dB below the FCC required limit is not mentioned in table.
3. Delta to Limit = Field strength (dBμV/m) – Limit (dBμV/m).
4. Calculated measurement uncertainty: 9kHz -30MHz: 2.58dB.hehe  
30MHz -1GHz: 2.58dB.  
1GHz -18GHz: 2.58dB.

**4.6 Conducted Emissions (0.15MHz to 30MHz)**

Test Requirement: FCC part 15 Section 15.207 Class B  
 Test Method: ANSI C63.4:2003  
 Test Date: 2013-08-02  
 Mode of Operation: Transmitting continuously mode  
 Detector Function: CISPR Quasi Peak  
 Measurement BW: 100 kHz  
 Worst Case Channel: Highest Channel

**Results : PASS**

**Test Setup:**



**Limits for Conducted Emission [ Section 15.207]:**

Frequency Range [MHz]	Quasi-Peak Limit [dB $\mu$ V]	Average Limit [dB $\mu$ V]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

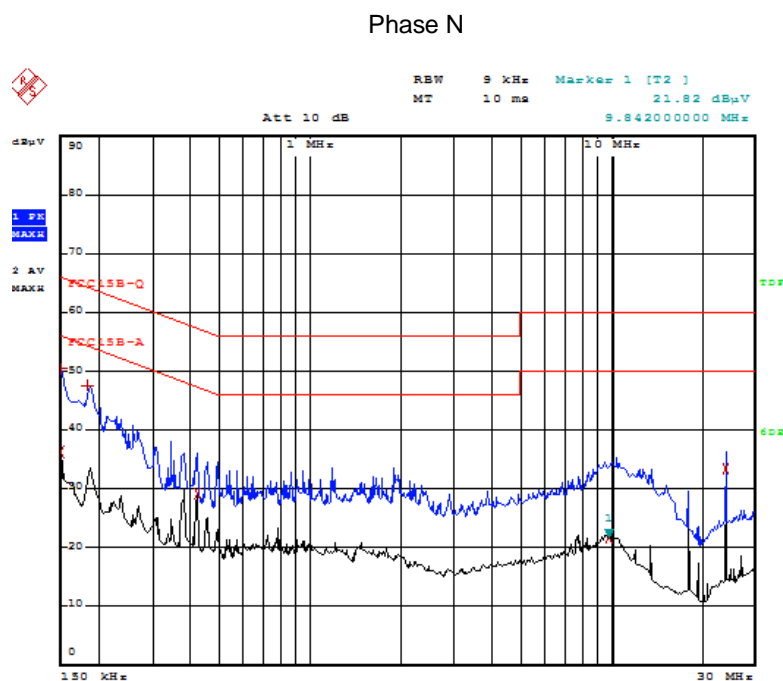
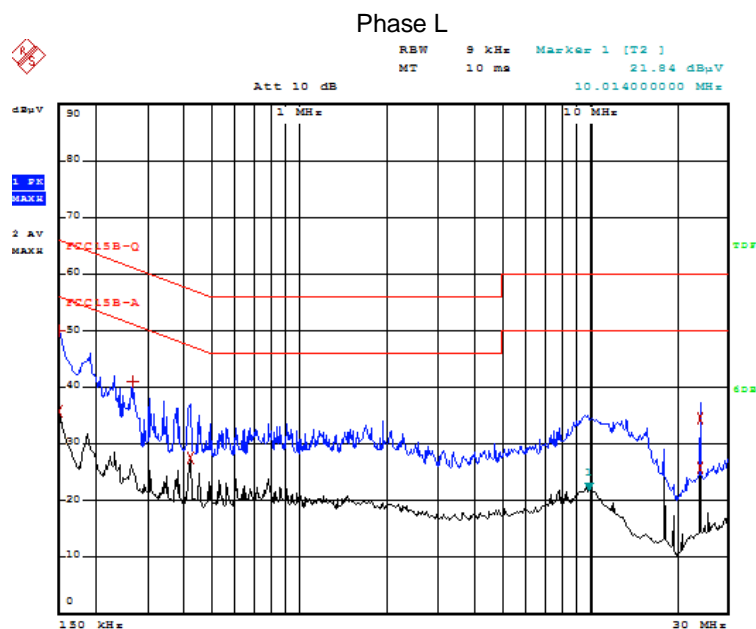
\* Decreases with the logarithm of the frequency.

Remarks:

Calculated measurement uncertainty:  $\pm 1.54$ dB



Result data graph shows the conducted emission (Line and Neutral).





Result data table shows the conducted emission (Line and Neutral).

Frequency (MHz)	Detector (QP/AV)	Phase	Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin
0.150	QP	L	50.07	66.00	-15.93
0.150	AV	L	35.67	56.00	-20.33
0.266	QP	L	40.94	61.23	-20.29
0.418	AV	L	27.49	47.48	-19.99
23.978	AV	L	34.50	50.00	-15.50
24.002	AV	L	25.94	50.00	-24.06
0.150	QP	N	50.52	66.00	-15.48
0.150	AV	N	36.24	56.00	-19.76
0.186	QP	N	47.56	64.20	-16.64
0.418	AV	N	29.18	47.48	-18.30
9.842	AV	N	21.82	50.00	-28.18
23.978	AV	N	33.45	50.00	-16.55



## 5.0 RF Exposure Compliance Requirement

Test Requirement: FCC part 15 section 15.247 (i)  
 Test Method: FCC part 15 section 1.1307 (b1)  
 OET Bulletin 65, Edition 01-01

### Results: PASS

Systems operation under the provision of this section shall be operated in a manner that ensures the public is not exposed to radio frequency energy levels in excess of the Commission's guideline,

The EUT is considered as a mobile device according to OET Bulletin 65, Edition 01-01, therefore distance to human body of min. 20cm is determined.

Frequency Band:	2.412GHz ~2.462GHz 2.422GHz ~2.452GHz
Device Category:	<input type="checkbox"/> Portable (< 20cm separation ) <input checked="" type="checkbox"/> Mobile (>20cm separation ) <input type="checkbox"/> Others :
Exposure Classification:	<input type="checkbox"/> Occupational/ Controlled exposure <input checked="" type="checkbox"/> General Population / Uncontrolled exposure
Max Transmit Power	11.99mW (10.79 dBm) 13.55mW (11.32 dBm)
Antenna Gain	1.0 dBi ( Numeric gain:1.26)
Evaluation Applied:	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

MPE calculation:

The maximum radiated power (EIRP) = the maximum output power+ antenna gain  
 = 11.32 dBm + 1.0 dBi  
 = 12.32 dBm  
 = 17.06 mW

The power density at 20cm from the antenna: = EIRP / 4π R<sup>2</sup>  
 = 0.0034mW / cm<sup>2</sup>

### Limits for General Population/Uncontrolled Exposure [OET Bulletin 65, Edition 01-01]:

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30



## 6.0 List of Measurement Equipment

### Radiated Emission

Manufacturer	Equipment	Model No.	Serial No.	Due Date
Agilent	Spectrum Analyzer	E4402B	US41192821	27 Mar 2014
R&S	Test Receiver	ESI26	838786/013	27 Mar 2014
Agilent	Spectrum Analyzer	E4402B	US41192821	27 Mar 2014
GONGWEN	Moisture Test Chamber	GDS-150	SEMT-0013	15 Jul 2014
R&S	Spectrum Analyzer	FSP30	836079/035	27 Mar 2014
C&C	Positioning Controller	CC-C-1F	N/A	19 Dec 2013
EM	RF Switch	EMSW18	SW060023	19 Dec 2013
Agilent	Pre-amplifier	8447F	3113A06717	27 Mar 2014
Compliance Direction	Pre-amplifier	PAP-1G18	24002	27 Mar 2014
SCHWARZBECK	Trilog Broadband Antenna	VULB9163	9163-333	24 Feb 2014
ETS	Horn Antenna	3117	00086197	24 Feb 2014
Albatross Projects	Anechoic chamber	MCDC	---	19 Mar 2014

### Line Conducted

Manufacturer	Equipment	Model No.	Serial No.	Due Date
R&S	Spectrum Analyzer	FSP30	836079/035	27 Mar 2014
R&S	Test Receiver	ESI26	838786/013	27 Mar 2014
Albatross Projects	Anechoic chamber	MCDC	SW060023	19 Dec 2013
SCHWARZBECK	Trilog Broadband Antenna	VULB9163	9163-333	24 Feb 2014
ETS	Horn Antenna	3117	00086197	24 Feb 2014
Agilent	Pre-amplifier	8447F	3113A06717	27 Mar 2014

N/A Not Applicable or Not Available